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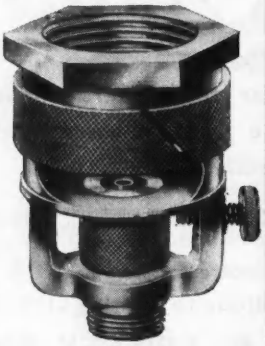

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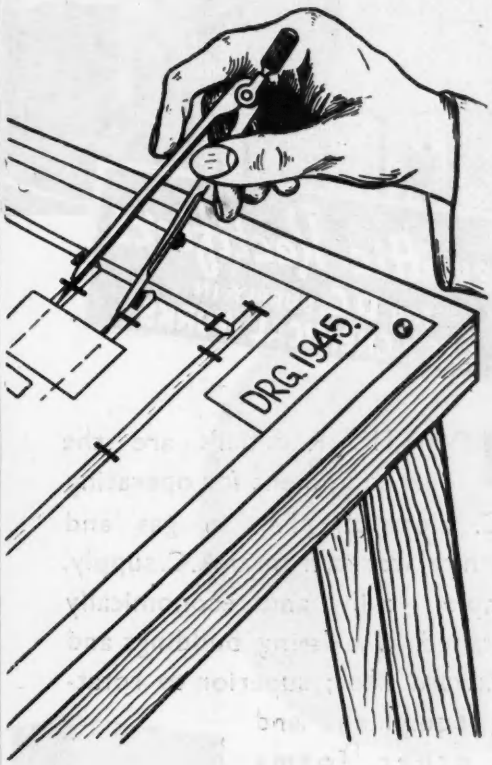

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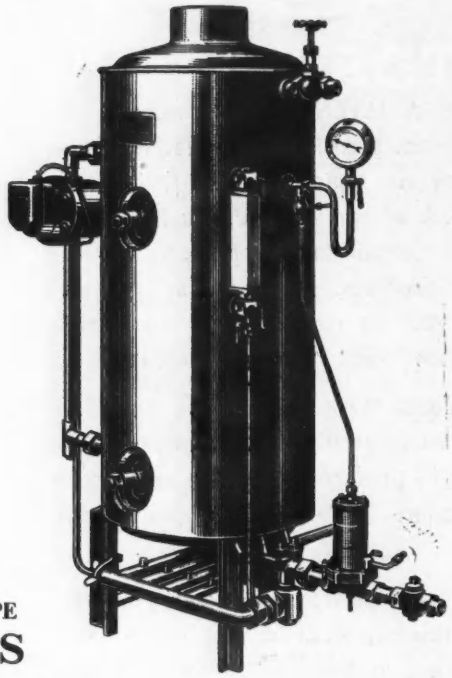

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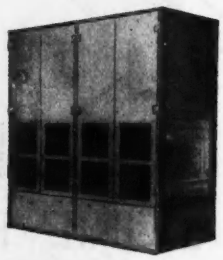

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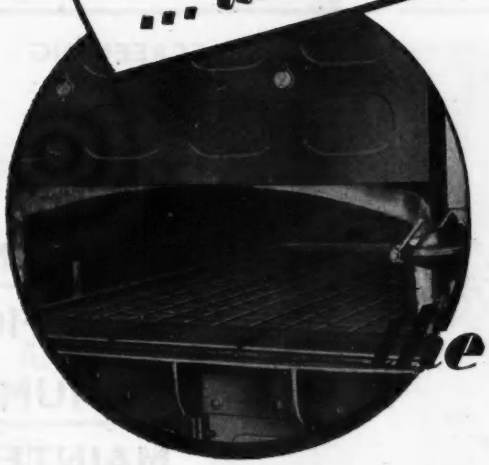

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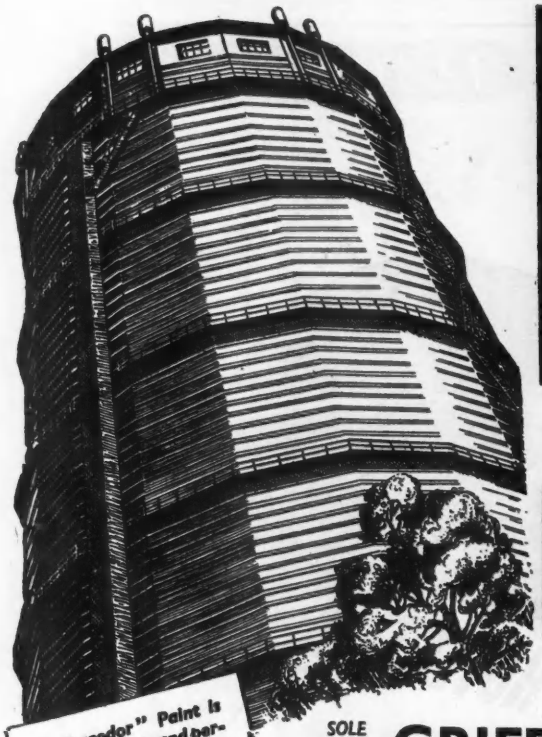

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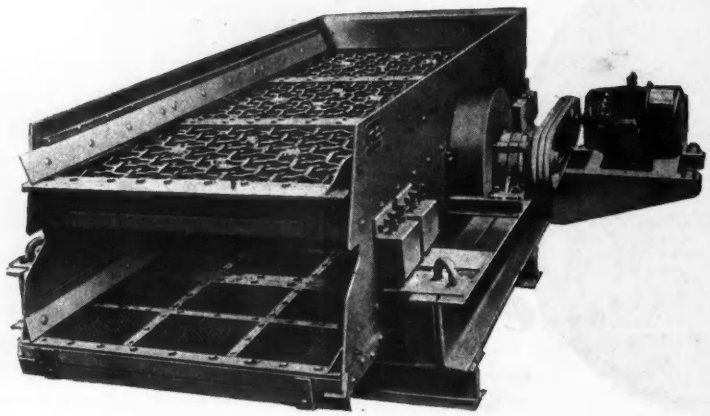

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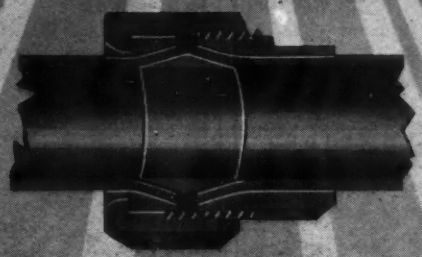

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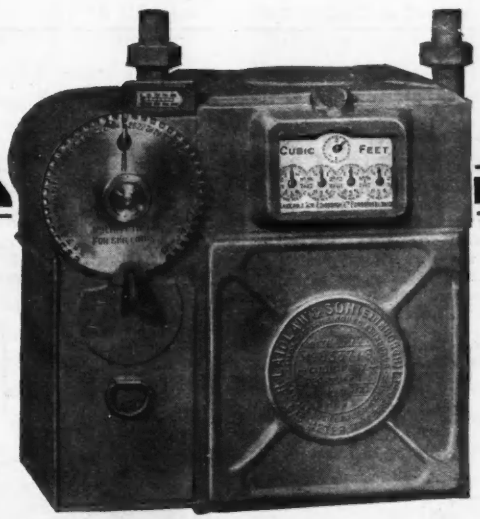

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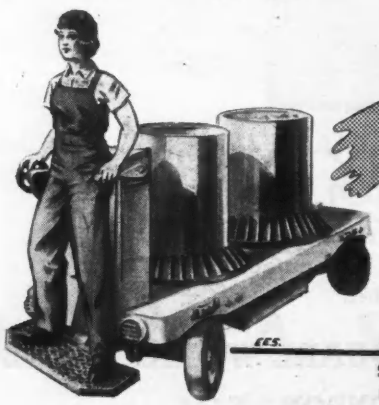

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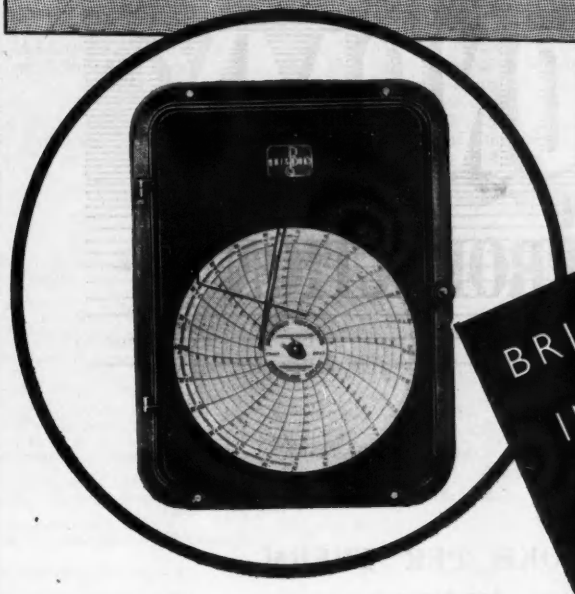

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GAS JOURNAL, JUNE 6, 1945

VOL. 245 97th YEAR No. 4281

EDITORIAL NOTES

INSTITUTION WEEK, 1945

IN the years before the Great War and in the years between that war and the Still Greater War, not yet ended, Institution Week was in the nature of an annual climax to Gas Industry activities. Plans were laid well in advance of the first week in June, and as the week loomed near bags were packed to take their owners in their stride through the technical regions of learned discussion and maybe, *inter alia*, through the social duties of Epsom or Ascot, nor does one forget the light—or was it fantastic—toe at the gas engineers' folk dance following the President's Reception. Institution Week was a multi-coloured mosaic, anticipated, enjoyed, remembered. Though the Still Greater War continues, London, freed from nightly menace, welcomes once again Institution Week, albeit in certain respects attenuated. The Chartered Institution meets next week for two packed days, the twelfth and the thirteenth, vigorous, rather more severe, certainly, we suggest, purposeful, and not withholding social entertainment.

It does not need Old Moore to conclude that Institution Week, 1945, is charged with event. On the day following the handing of the Institution baton by Mr. Whitehead to Colonel Croft the National Gas Council will meet, as such, for the last time. Synchronous will be a valetudinary meeting of the British Commercial Gas Association. There will be merger into the British Gas Council, to which the Institution will lend co-operative action as a distinct corporate professional entity. On the same day the Federation of Gas Employers will gather to discuss and consolidate the labour relationship in the Industry. But we think we can confidently anticipate next week—influenced and permeated to an extent perhaps by tradition—as, foremost, Institution Week.

And so, we wish the President a successful meeting amid conditions very different from those existing twelve months ago. Mr. Whitehead has had a strenuous Presidential year, and has been unsparing in his efforts to promote the welfare and strengthen the prestige and status of the Institution. If current scarcity of accommodation in the Metropolis is index to past difficulties surmounted, equally the large number of Institution members who have secured accommodation to be present at a meeting which is sure to be enjoyed is index to the virility of the Industry and can be regarded as compliment to the President, whose works at Southampton did not go unscathed in the Still Greater War years.

Why do we suggest that the meeting is sure to be enjoyed? The Gas Industry can regard its war efforts objectively with reasonable satisfaction. Part of the programme will be devoted to some account of the Industry's war achievement, in which regard the technical fare will not be found wanting in inspiration. Part of the programme will be directed to what the Industry has to offer in certain directions in the times ahead, in the transition to what we all hope will be a better form of living, with a happier community working for less transient ends. And here again we are certain that the inspirational factor in the technical fare to be presented will not be lacking. The potentialities of the Gas Industry for national service stand out more clearly after the testing time of the past five years and more than they ever did before. They demand more general recognition—towards which goal we think the Institution meeting on Tuesday and Wednesday of next week will help greatly. Collectively and individually we have cause for good cheer, which spirit we feel should predominate during this year's two-day Institution Week.

PUBLIC RELATIONS

"A QUERULOUS note is heard in certain quarters to-day, and it is suggested that, because of its supposed modernity, electricity is receiving a false support by Press and public alike. A counterpart publicity for our Industry is a matter for action rather than for unavailing lamentation at the ways of our competitors." With the substance of which remark, quoted from the recent Presidential Address of Mr. Hunter Rioch to the Eastern Counties Association, we have no quarrel. Judging from our contemporaries in the electricity industry, that industry is far from disrespectful of gas advertising and many have been their expressions of envy of it in the past, but more recently—and the sole cause cannot be "modernity," which too obviously is diminishing—electricity has for some reason or other "got away with it" on several occasions in the Press, maybe in part because it is, for good or ill, a political favourite. The war in Europe is over, less is and no doubt less will be heard of truce between gas and electricity, and though in the long run the fuel business will pass to the better public servant—that industry providing the higher standard of service at the lower cost—the Gas Industry nationally and gas undertakings individually must, through all channels available, do all possible to cultivate that factor which has come to be known as "public relations."

Publicity, as we have often emphasized, is not merely a matter of Press advertising, however voluminous and however skilful. There are many other forms of propaganda, not the least important being activity in the educational sphere, in schools and among other educational bodies, groups, and societies. We should, for example, publicize the opportunities existing for a career in the Gas Industry, maintaining closer contacts with technical colleges and the like, for a student gains an impression of an industry by the interest shown in the work of the colleges by that industry—a point made by Mr. Rioch. It is in respect of this value of publicity in its wide sense that we regard with great satisfaction the proposals for educative publicity of all kinds put forward in the Gas Industry's programme newly announced for 1945–46. It is a comprehensive programme, and it is not conceived on petty lines. We shall hope for much from the considerable overall expenditure which it has been decided to allocate to publicity, to public relations, in its wide sense, wisely including special steps to ensure that the men and women returning to normal civilian life should be cognizant of the advantages of gas for domestic purposes, and substantial provision to allow each district to set up its own propaganda and public relations staff.

We have spoken of the need for individual gas undertakings, each in its own area of supply, to supplement in serious vein, consistently, not spasmodically, the work undertaken on the national and regional scale, and Mr. Rioch's own determination in this regard attracts us because it has already resulted in effective practical application. He has assessed the value of close contact with the Press and has acted accordingly. The Cambridge Company has a "Press Officer" who serves as link between the Company and the local papers, helping their staffs in every possible way, attending to their comfort. Not unnaturally this idea has especial appeal to us, but we go beyond the personal and particular in maintaining that Mr. Rioch, in fostering goodwill and co-operation in this way, is working in the interests of his undertaking and its consumers and of the Gas Industry generally.

COAL INDUSTRY REORGANIZATION

WITH the question of amalgamation and group working uppermost in the councils of the Gas Industry, and with such reduced justification for saying *ça ne fait rien, c'est la guerre*, the Industry will no doubt have paid more than scant attention to, and perhaps will have placed some interpretation on, the survey of the Government's intentions—*i.e.*, the intentions of the "caretaker" Government—regarding reorganization of the coal-mining industry as outlined in the House of Commons last week by the Minister of Fuel and Power. The basic fact underlying the problem and making reorganization imperative in the national interest is that the total output of coal in this country has fallen by nearly 50,000,000 tons a year since the war began—in other words by as much as the consumption classed as "for domestic purposes." A White Paper on the Ministry's activities since its establishment was issued on the day prior to Major Lloyd George's survey in the House. This Paper—an abstract of which relating to the Gas Industry was given in our issue last week, p. 690—showed that of the decline in output of coal of 5% in 1944, 1% was accounted for by dispute losses. In the first quarter of 1945 the output was 3½% below production in the corresponding period of 1944. Also, voluntary absenteeism had in the first quarter of the present year grown to 6.3%, from 5.6% in 1944. The price of coal at the pit-head to-day is double what it was in 1939. In terms of man-hours, miners' earnings to-day stand second on the list of industrial wage-earners; yet, while wage increases account for two-thirds of the total increase in the cost of coal, decline in production continues. Wherein lies the remedy?

Major Lloyd George maintained unequivocally that the position could not be remedied by a mere change of ownership. That, he said, offered no solution. The Government considered that the working, treatment, and disposal of coal should continue to be conducted by private enterprise, provided these were planned in accordance with the national need and conducted with the maximum efficiency. The Government had therefore decided that a central authority appointed by the Minister of Fuel and Power and subject to his general direction should be set up to insist that the necessary measures were taken and provide such help and guidance as would be useful—such measures centred on the proper development and efficient conduct of operations in each coalfield according to the best modern practice. In so far as the grouping or amalgamation of collieries was necessary it would be carried through voluntarily if possible, but otherwise by compulsion. Amalgamation for amalgamation's sake was not proposed for this diversified industry. There were often to be found highly efficient undertakings which were sometimes not large. In such cases amalgamation would only be proposed if there were clear advantages to the nation and the industry. The analogy in this respect between the Gas Industry and the coal industry needs no stressing.

The policy outlined would, the Minister argued, preserve the incentives of free enterprise while safeguarding the industry from political interference in its day-to-day management. It would also provide the necessary sanctions for ensuring that the improvements recommended in the Reid Report (referred to in the "JOURNAL" of May 23) were carried through.

Municipal Public Relations

With one third of the Industry under direct municipal ownership and the other two-thirds intimately concerned with local government in a great variety of ways, the Gas Industry clearly has more than a casual interest in a report on "Relations between Local Government and the Community" just issued by the Reconstruction Committee of the National Association of Local Government Officers. With a view to establishing a closer partnership between the local authority and the citizen, the report recommends the setting up by each local authority of appropriate public relations machinery, with a public relations officer, and the setting up by the national associations of local authorities, in collaboration with the national organizations of local government officers and relevant voluntary bodies, of a National Local Government Public Relations Council. It goes on to suggest detailed methods by which the public may become more fully informed of the work of local councils, and points out that in the past not more than 25–35% of the electors have taken the trouble to vote. With the resumption this year of municipal elections, ten million men and women will have the right to vote for the first time in their lives. How many of them will exercise their right will depend to a large extent on the steps taken to give them an intelligent interest in and understanding of the functions of local government.

Personal

The Directors of the Wandsworth and District Gas Company announce the following new appointments: Major C. R. M. CROFT, Deputy General Manager; Mr. R. M. FARROR, Assistant Chief Engineer; Mr. R. J. MCCRAE, Acting Secretary, and to be Secretary on the retirement of Mr. G. M. WILLMOTT in September next; Mr. M. A. MANN, Assistant Secretary and Registrar.

* * *

Mr. G. E. THOMAS, Assistant Industrial Sales Manager for the past eight years, has been appointed Industrial Gas Engineer to the Watford and St. Albans Gas Company in succession to Mr. E. S. DAVIES, who has left to take up another appointment in the west country. Over the past nine years the industrial load in the Company's area has risen by over 500%.

Letter to the Editor

Gas Industry Terms

DEAR SIR,—"Sticklor" is nearly right. The signature should have been—

Yours faithfully,
"CARBONIZOR."

May 31, 1945.

1945 "Journal" Directory

Page 8. BIRMINGHAM. A. W. Lee, *G.M.&S.*, *vice* A. W. Smith.
,, 28. GAINSBOROUGH. H. Shackleton, *E.&M.*, *vice* J. A. Derbyshire.
,, 28. G. L. & C. Co. A. E. Sylvester, *Governor and M.D.*, *vice* Sir David Milne-Watson.
,, 32. HECKINGTON. J. P. Keogh, *E.&M.*, *vice* G. E. Shearman.
,, 40. LANCASTER. Telephone 1371/3.
,, 50. NORTH CHESHIRE. J. Wilson, *E.&M.*, *vice* N. B. Thompson.
,, 80. WREXHAM. R. A. Jones, *S.*, *vice* J. C. Williams.
,, 96. DUBLIN. N. J. Robertson, *G.M.*, *vice* W. J. Grey.
DUBLIN. B. J. Doyle, *S.*, *vice* W. J. Grey.

Diary

June 11.—National Federation of Gas Coke Associations: National Technical Committee, Gas Industry House, 2.30 p.m.
June 12–13.—Institution of Gas Engineers: Annual Meeting, London.
June 14.—N.G.C.: Annual Meeting, Gas Industry House, S.W. 1, 10.30 a.m.
June 14.—Federation of Gas Employers: Annual Meeting, Gas Industry House, S.W. 1, 2.30 p.m.
June 14.—B.C.G.A.: Annual Meeting, Gas Industry House, S.W. 1, 11.45 a.m.
June 21.—Industrial Gas Centres Committee: Gas Industry House, 10 a.m.
June 23.—Western Junior Gas Association: Meeting at Minehead.
June 25.—London and Counties Coke Association: Finance Committee, 11 a.m.; Executive Committee, 11.30 a.m.; Central Committee, 1.30 p.m., Gas Industry House.
June 25.—Women's Gas Council: Annual General Meeting, Gas Industry House, 3 p.m.
July 6.—Manchester District Association of Gas Engineers: Visit to Rochdale.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Aluminium Exhibition

"Aluminium from War to Peace" is the theme of a very fine exhibition which was opened by Mr. Ernest Brown, the newly-appointed Minister of Aircraft Production, at Selfridges on May 30, and which will remain open to the public until the end of June. Organized by the recently-formed Aluminium Development Association, representing all sections of the young and vigorous aluminium industry, the exhibition is the first of a series to be held at the famous London store to illustrate the transition of various industries from wartime to peacetime production. The present exhibition indicates the major part which the aluminium industry played in the Allied victory in Europe, and the versatility with which it is planning to do much more for peace. There are examples of the application of aluminium in air, land, and sea transport, in general industry, in housing, and in the home. Its domestic uses are typified in a wide variety of hollow-ware and furniture—not yet on the market, but only awaiting the lifting of controls—and in a gas-equipped package kitchen and a prefabricated kitchen-bathroom unit similar to those shown at the Kitchen Planning Exhibition earlier in the year. Gas water heaters, wash boilers, cookers, and fires are also shown either wholly or in part in aluminium; there is also an ultra-modern all-electric kitchen.

In opening the exhibition, the Minister of Aircraft Production said its aim was to show that the industry was equipped to meet demands for a highly suitable material for the manufacture of the essentials of modern life. This was the more important, because a very high number of workers, both skilled and unskilled, were now experienced in the machining, manipulation, and use of aluminium, and the Exhibition Committee, which represented both producers and developers, had come together to sing the praises of aluminium.

Speaking subsequently at a luncheon at the Savoy Hotel, Mr. H. G. Herrington, of High Duty Alloys, Ltd., said that one of the latest triumphs of the industry was the aluminium house—a perfectly planned and well-made product, capable of being factory produced and transported in sections to the site, complete with all fittings *in situ*.

The Need for a public intelligently aware of the meaning of town planning was stressed last week by Mr. James Welsh, Lord Provost of Glasgow, when he opened an exhibition—"When We Build Again"—in the Corporation Gas Showrooms. The first obstacle to realizing the ambitious plans for planning and replanning towns, he said, was unenlightened public opinion. He welcomed the exhibition, and commended it warmly to the interest of the citizens of Glasgow. The exhibition is being held under the auspices of the Scottish Building Centre, in collaboration with the Town and Country Planning Association and Messrs. Cadbury Bros. Ltd. It comprises plans, diagrams, and models, showing the modern planning of a town, a replanned district in an existing large town, and the location of a satellite town in relation to an existing town. Other features are an electric and a gas kitchen unit, both full size, The models show dwelling-houses, schools, parks, recreation grounds, and shopping centres. Also on display are the plans accompanying the first planning report submitted by the Glasgow City Engineer to the Highways and Planning Committee.

At the Annual Meeting of the Illuminating Engineering Society, the President called attention to the progressive growth in membership, which now exceeds 1,600, and to the fact that 10 Centres and seven Groups are now in operation. Centre status is to be granted to the recently formed Groups in Edinburgh and Liverpool, and since the opening of the present year a new Group has been formed in Halifax.

It was recalled that during the past year an increase in subscriptions, to provide for extension of administrative arrangements at headquarters and to facilitate the development of post-war activities, had been approved by members. In this connexion the Council had appointed, as Secretary of the Society, Mr. Raymond Pye (the Hon. Secretary of the Leeds Centre). In the course of the meeting it was reported that Mr. H. C. Weston had been elected President for the forthcoming session.

To the Scientific Instrument Manufacturers' Association of Great Britain, Ltd., Mr. W. Bowen, Governing Director of the Bowen Instrument Company, Ltd., Cables and Plastics, Ltd., and Bowen Research, has presented a substantial capital sum, the income of which he wishes to be devoted towards the encouragement and development of invention, design, research, processes, and manufacturing technique in the scientific instrument manufacturing industry. The Council of the S.I.M.A. have drawn up a Deed of Trust under which the income from the Trust Fund is to be devoted each year to prizes to be awarded to the employees of members submitting papers fulfilling the objects of the Trust. For the current year the Council have decided to award five prizes to the value of £25 each for (*a*) a new invention; (*b*) an improvement of design; (*c*) an improvement in manufacturing technique; (*d*) a new development or new process arising from research. Candidates should furnish a short description of one of the above subjects not exceeding 3,000 words with relevant sketches or diagrams. All papers must be submitted to the Secretaries, Messrs. Binder, Hamlyn & Co., River Plate House, 12/13, South Place, London, E.C. 2, by not later than Dec. 31, 1945.

Gas Industry and Competition

Prior to the Annual Meeting of the British Commercial Gas Association and the National Gas Council in the North West, a Luncheon was held at the Adelphi Hotel, Liverpool, at which the guest of honour was Mr. A. E. Sylvester, Governor of the Gas Light & Coke Company and Chairman of the British Gas Council.

Mr. SYLVESTER, addressing the members, said that although the political future was rather obscure, it was clear that a national policy of co-ordination for the fuel industries was inevitable. The Central Electricity Board had been a powerful influence to the advantage of the electrical industry. At present there was no real plan for the Gas Industry, but its affairs were being looked into by the Heyworth Committee and the National Fuel Council under Sir Ernest Simon as Chairman. Their findings when published would almost certainly be put into force.

He did not think that the Gas Industry could be allowed to continue as organized at present. Looking at the facts, there was great and growing evidence that in the manufacture of gas and its bulk transmission the costs could be reduced by amalgamation and co-ordination. This point was undoubtedly being considered by the Heyworth Committee. The other main aspect of the Industry—service to the consumer—presented an entirely different problem, for the housewife was concerned only with the problem of obtaining the greatest benefit from the gas appliances.

The two methods of ownership in the Industry appeared to him quite irreconcilable. He believed that the company method was best, but no proper investigation had ever been made, and more facts were needed. In the North-West Region there were about 120 undertakings, of which about half were municipally owned. He advocated that the North-West members should get together and look into the problem locally instead of waiting for Headquarters to do this. The standard for the Industry would be set by the quality of service to the consumer. Price by itself was not a reliable guide to the quality of service provided.

As to competition, if the electricity industry continued their unfair exploitation of the lighting monopoly, the price of gas for cooking would not be fairly and properly compared with that of electricity. If every consumer understood the full facts about the lighting monopoly, the cooking load would adjust itself.

Referring to the British Gas Council, he said that its formation had become necessary because policy and commercial matters could no longer be disentangled; it was desirable to put them together. The British Gas Council was a temporary bridge, and would, he hoped, be ratified in June and confirmed for a further temporary period. A Constitution would then be drafted, and the British Gas Council would then become the main body of the Industry. Over the past few months the British Gas Council had been of the greatest possible use in enabling the Industry to speak to the Government with one voice. For the future it was necessary that an organization should be built up with much stronger regional organizations, so that Headquarters should become more a clearing-house for ideas coming from the regions. This method would be easier to work and would give greater satisfaction. Finally, Mr. Sylvester said he was optimistic for the future, and he was convinced that the Industry would continue to give service and fulfil a really first class national duty.

Colonel W. MONCRIEFF CARR (District Chairman) said that during the past year they in the North-West of England and North Wales had distributed nearly 50,000 million cu.ft. of gas. Practically every type of war industry had been represented in the region, using gas for one purpose or another. It was to be hoped that the present restrictions placed on extensions and development by the Minister of Fuel and Power, pending the report of the Heyworth Committee, would not be prolonged, as therein lay a serious danger that the extension and development of gas service might be prevented from proceeding in line with, and in time to meet, the requirements of new post-war factories and houses.

Following the luncheon three meetings were held in the Demonstration Theatre of the Liverpool Gas Company.

At the Annual Meeting of the British Commercial Gas Association (North-West Region) the following appointments were made for the year 1945–46:

Regional Chairman: Colonel W. Moncrieff Carr, O.B.E., T.D., United Kingdom Gas Corporation.

Deputy Regional Chairman: F. A. West, Altrincham.

Regional Honorary Secretary: Stanley Hopkinson, Liverpool.

Elected Representative of the Region to the Executive Committee: Stanly Hopkinson.

The annual meeting of the Manchester District Executive Board of the National Gas Council and a Joint District Meeting followed.

The Aberdeen Gas Department joined with other Scottish gas undertakings in making a valuable contribution to the war effort, maintaining and extending production, with substantial increases, despite all the difficulties of wartime operation. In the case of Aberdeen there was added enemy bombing, Aberdeen being the most bombed city in Scotland. Thirty-four raids were made on the city, which had some 400 "alerts." No fewer than 51 members of the pre-war staff of the Gas Department were called to or volunteered for the Forces and 16 were taken for other industrial work, making a total staff loss of 67.

A Report on Smoke Abatement

A Report on Smoke Abatement, a clear and convincing statement, has been prepared by Mr. J. E. Stanier, Chief Engineer and General Manager of the Stoke-on-Trent Gas Department, and has been presented to the Housing Committee. In the course of this report, which covers both industrial and domestic usage of fuel, the Author states that the output of the North Staffordshire collieries is probably about six and a half million tons, all of which is high-class bituminous coal having excellent caking and gas-making properties. It is estimated that approximately 25% of this production is consumed locally in North Staffordshire, so that roughly 1,625,000 tons are used for industrial and domestic purposes. The domestic coal consumption for Stoke-on-Trent only in 1938 was estimated to be approximately 350,000 tons.

Out of the approximate tonnage of 1,175,000 tons of coal used for industrial purposes in the North Staffordshire district, it is estimated that some 750,000 tons are used for the ceramic industry and for the brick and roofing tile trades. The majority of this tonnage will be used for firing processes, with smaller quantities being consumed for ancillary purposes such as steam raising, clay drying, &c.

Rapid progress was being made up to 1939 in the conversion of the old type of intermittent bottle oven which uses raw coal, to the continuously fired tunnel oven which utilizes town gas. Before the advent of the continuous tunnel oven, ceramic firing was carried out in intermittent ovens using raw coal, with thermal efficiencies much below 10%. This process was accompanied by smoke, dirt, ashes, and so on, with the temperature and temperature gradient entirely dependent upon the human factor. To-day we have gas-fired tunnel kilns for china, earthenware, electric porcelain, wall tiles and sanitary ware. They operate on many times the thermal efficiency of the old bottle ovens, and work automatically with no emission of smoke and an absence of dirt and ashes. Not only in this instance have large savings been achieved in the fuel consumed, but, more important, the absolute control throughout the firing process has resulted in the production of almost 100% perfect ware, thus saving fuel which would otherwise have been consumed to produce faulty ware destined for the scrap tip. Up to the outbreak of the war, raw coal approaching 100,000 tons per year had been replaced by town gas in the pottery firing processes. The development of the continuous gas-fired tunnel oven is illustrated by the following comparative figures:

Year.	Number of tunnel ovens in use.	Annual consumption (cu. ft.).
1933	2	36,805,800
1939	66	1,341,336,800

To produce the gas used for ceramic firing in 1939 some 80,000 tons of coal were required, from which, in addition to the gas, some 250,000 gallons of motor benzole, 1,200,000 gallons of tar, and 40,000 tons of coke were produced.

Only some 10% to 15% of the pottery concerns have changed over from raw coal to town gas firing, so that there is a great deal of scope in the future if the industry is going to be completely smokeless.

It is now accepted as a basic principle in the ceramic industry that the continuous firing by town gas or producer gas is economical, efficient, and effects a considerable conservation of fuel. It can be confidently anticipated that in the very near future pottery firing will become entirely smokeless, but the change-over cannot be made immediately, in view of the reconstructions and alterations which will be necessary on the part of the pottery manufacturers at their works, and in providing the plant for the manufacture of the vast quantities of gas needed. It is expected that within a period of 5 to 10 years from the end of hostilities, additional quantities of town gas for ceramic firing will be required to the extent of 12 million cu.ft. per day. Should this demand materialize, approximately 257,000 tons of coal per annum would have to be carbonized to make the gas, and as a result some 125,000 tons of coke will be made available, which could be used as a smokeless fuel for domestic and other purposes. In addition, 3½ million gallons of tar would be produced, 800,000 gallons of motor benzole, and 700,000 gallons of concentrated ammonia liquor.

If similar projects could be visualized for the heavy clay industries, like the brick and roofing tile trades, and other smaller industrial concerns who are at present using raw coal, we should be able to look forward in the years to come to the total elimination of smoke in local industry.

In Connexion with VE Day and the succeeding day's celebrations, the Bradford Gas Department carried out a most effective scheme of illumination of their Showrooms, together with a high-pressure gas sign over the Showrooms, consisting of "G VI R" under a Crown. The sign was illuminated with approximately 227 high-pressure gas mantles supplied with gas at 80 in. w.g. pressure. It provided intense illumination, so much so that photometric tests taken on the pavement below varied from 3.5 to 8.5 foot-candles. (Compare this with the British Standards Street Lighting Specification, which provides for 2 foot-candles for the best Class "A" road lighting.) There was also floodlighting of the building of the *Bradford Telegraph and Argus* Offices. This was by special circular flood lamps from the Gas Department's Offices opposite. Four circular flood lamps were used, each fitted with 10 low-pressure No. 2 medium gas mantles.

Midland Juniors

The Midland Junior Gas Association visited the Oldbury Works of Midland Tar Distillers, Ltd., on April 24, when they were welcomed by Mr. H. C. Bennett and Mr. C. B. Ball.

The crude benzole distillation plant constructed by the Woodall-Duckham Company, with Foxoboro-Yoxall instrumentation, impressed the visitors as a fine example of modern engineering practice. The plant is continuous in operation and produces motor benzole, toluole, and solvent fractions. Steam economy is rigorously practised and advantage is taken of heat exchange. The Foster Wheeler continuous crude tar distillation units were examined. These are fitted with automatic control throughout and many of the latest developments in tar distillation are incorporated. The tar, when entering the still, is first freed from moisture in a preflash column, and then passes through the radiant bank of the heater to be fed at a higher temperature to the fractionating column, where it is flash vaporized and split into various fractions of predetermined distillation range. Heat interchange is widely practised, vaporized products and outgoing liquid pitch returning heat to the incoming crude tar. Washing of the distillates is carried out in Holley Mott continuous washing plants, the first fraction being freed of tar acids and pyridine, and finally rectified, the second fraction being washed for tar acids only. The rectified first fraction is distilled under vacuum in steam-heated stills, the acids being recovered continuously.

After the tour of the works the President of the Association (Mr. F. J. Bengough), supported by the Secretary, Mr. A. Hill (since retired), thanked the Company for their invitation and hospitality.

Mr. W. E. Aylwin, a Director, in acknowledging the vote of thanks gave a brief history of the works, and pointed out that much of what they had seen would not be found in text-books dealing with the treatment of crude tar.

Scottish Western Juniors

The Annual General Meeting of the Scottish Junior Gas Association (Western District) was held on May 5 in Glasgow, Mr. DAVID L. DICKSON, President, in the Chair.

The following were elected as Office Bearers for the Session 1945–6:

President: Alexander McFadyen (Engineer and Manager, Dumbarton).

Vice-President: Douglas C. Dow (Assistant Engineer and Manager, Alloa).

Hon. Secretary and Treasurer: Edgar Sage (Technical Assistant, Falkirk).

Librarian: John H. Fulton (Assistant Engineer and Manager, Dumbarton).

Council: Retiring 1946: J. O. Crawford, Renfrew; A. Campbell, Johnstone; D. L. Dickson, Airdrie (*ex-officio*); D. Rowan, Neilston; J. Sorley, Motherwell. *Retiring* 1947: L. Bain, Greenock; R. Copland, Ardrossan; J. Kinnon, Helensburgh; C. Wilson, Carluke; W. B. Wright, Colvilles, Ltd., Glasgow.

Auditors: F. Hailstones and J. Greig (Glasgow).

Mr. JAMES HALL, the Association's representative on the Scottish Education Committee of The Institution of Gas Engineers, gave a report which aroused much discussion.

Plastics in Engineering

In dealing with the present and future possibilities of plastics in engineering, in a Paper read before the Society of Engineers at Burlington House on May 7, Dr. V. E. Yarsley devoted the first part of his talk to a consideration of plastic materials commercially available, and a brief description of some of the methods operated for their application. He endeavoured to counteract some of the erroneous ideas about these materials of construction which have grown up in recent years, mainly on account of over zealous propaganda and the secrecy which has been enforced during wartime. These new materials are not likely to sweep away conventional materials of construction, but wisely applied they can aid the engineer to overcome many long-standing difficulties. Plastics are relatively expensive materials, so that they can be applied logically and economically only in "key" roles. By comparison with established industries, the plastics industries throughout the world are relatively small, and it is doubtful if world production at the present time of legitimate plastics exceeds one million tons per annum.

Dr. Yarsley dealt with some of the more recent applications of plastics in various fields of engineering, and in particular the use of plastic adhesives and cements. From relatively small beginnings this branch of the industry has grown rapidly during the past two years, and it may be claimed to have revolutionized what was once known as the plywood industry. While expressing a warning against expecting plastics to function as miracle materials, the Author was nevertheless optimistic of their future possibilities in engineering. He said that the ingredients for their successful working are simple—namely, wise selection of materials and careful application based on sound design. Injudiciously applied they may prove a disappointing and dismal failure; wisely applied they may do many jobs better than other materials.

Pennies or Shillings?

The calls of the Services having resulted in a staff of nearly 80% women, the Liverpool Gas Company sought means of inducing the public to use shillings instead of pennies in dual meters.

The public was interested through the Press and cinemas and reacted immediately to the idea of easing the burden of these women attempting to do a man's job, especially in view of the national shortage of copper. Localities situated at a distance from shops and banks and particularly in hilly areas were canvassed with excellent results, but these calls were made in the ordinary way of collection, as there is no labour available for direct canvass. The success of the scheme may be measured by the fact that in 1942 14% only was collected in silver, while in 1944 this percentage had been increased to 34% and is still increasing.

The advantages to the consumer may be summarized: (*a*) Fewer journeys to the meter to insert coins; (*b*) less likelihood of the gas supply failing when cooking is in progress; (*c*) the consumer is rarely confronted with a full meter if shillings are used; (*d*) there is less likelihood of a bent or battered shilling causing obstruction in the slot mechanism.

From the Company's point of view the advantages might be further summarized: (*a*) Less wear and tear with a consequently longer life for the coin mechanism; (*b*) collectors' banking time and time in consumers' houses reduced so that more collections are made; (*c*) reduction in the number of special collections required by heavy consumers; (*d*) economy in paper (a 5s. copper wrapper will contain £3 in shillings); (*e*) periodicity of collections can be extended without increasing the number of requests to empty full boxes; (*f*) fewer escapes at meter inlet and outlet pipes caused by consumers shaking full meters to insert coins; (*g*) less strain on the collectors, as silver is only one-twentieth the weight of an equivalent amount of copper.

The above makes a strong case for the use of the shilling meter in preference to the penny, but it is not the intention of the Liverpool Gas Company to remove the penny meters entirely from the area of supply, as it is recognized that there will always be certain consumers to whom the facility for using pennies will be essential.

Bristol Air Raids

Bristol was one of the most heavily bombed provincial cities during the war, and there were occasions when parts of the area were without gas supplies for periods of up to a week, but on the whole the Bristol Gas Company maintained its essential service to war factories and the homes of its consumers with extraordinary success. A 16-page report just circulated to shareholders recounts the various "incidents," which included the destruction of three gasholders, the fracture of hundreds of mains, and the destruction of thousands of meters and appliances.

In the first big raid in 1940, 12 mains were fractured and 64 services had to be cut off. Two months later a holder was destroyed, and so severe was the damage to the mains system that even before emergency connexions could be attempted a large number of mains had to be capped off. Thousands of consumers were temporarily without gas, and workers came from Bath, Weston, Swindon, and Clevedon to help in the repairs. A few days later more mains were damaged and a holder was fired by an incendiary bomb, an employee who extinguished the fire being subsequently awarded the George Medal. In four raids in 18 days at the end of 1940, nearly 200 mains were damaged and 2,000 services were put out of order.

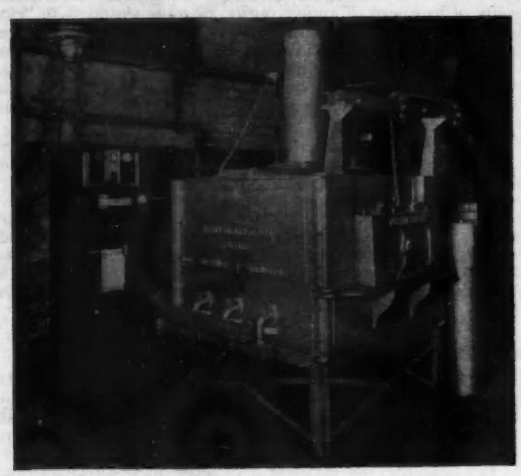
Early in 1941 another holder was destroyed, and another employee got the B.E.M. for gallantry. The third holder was destroyed on Good Friday, when 100 mains were also fractured. Despite the temporary dislocation of supplies in certain areas no vital factories were entirely without gas for more than four days, and the Company was thanked by the Ministry of Aircraft Production for the manner in which supplies were maintained. In 1942 Bristol repaid its debt to Bath by sending assistance and supplying 70 million cu.ft. of gas when the Bath works sustained major damage, and a month or two later Weston also suffered damage, and Bristol workmen went to help with the repairs. The last "incident" at Bristol was on April 25, 1942, when one 12 in. main and a few smaller mains were fractured.

When the stand-by organization was finally suspended last September, the Company was thanked by the A.R.P. Controller for its continuous and willing co-ordination throughout the emergency period, which had enabled a service to be rendered to the city which could not otherwise have been the case.

Two New Draft Codes of Practice—the "Installation of Gas Operated Refrigerators" (C.P. (B) 459) and "Gas Cooking Installations" (C.P. (B) 462)—have been issued for comment by the British Standards Institution under the authority of the Codes of Practice Committee formed under the ægis of the Ministry of Works. Comments received up to June 27 will be examined by the Code and Drafting Committee. The final draft will be submitted by the Engineering Services Sectional Committee for the approval of the Codes of Practice Committee. Copies of the Draft Codes are obtainable from the British Standards Institution, 28, Victoria Street, S.W. 1, price 1s. post free.

Control of Furnace Dampers

The extended application of automatic temperature control has emphasized the necessity for maintaining constant draught conditions in industrial furnaces. To meet this need a new master control system for furnace dampers has been developed by the Incandescent Heat Company, Ltd., Birmingham, in which an ultra-sensitive manometer, sensitive to the nearest 0.001 in. W.G., is connected by a pressure leg to the furnace chamber and operates a fractional h.p. motor connected to the furnace damper. The damper responds to any pressure variation in the furnace chamber, and in the case of furnaces fitted with automatic temperature control a reduction of gas or air supply leads immediately to a corresponding alteration in the damper settings, absolutely constant pressure conditions within the chamber being assured.



The temperature control unit, incorporating the damper control mechanism, temperature indicating and recording instruments, applied to a small general heat treatment furnace.

The gear is so fitted that the waste gas damper will close as soon as the furnace door is opened for charging or discharging operations, and will automatically open again by precisely the right amount as soon as the door is closed. A curve taken from a CO_2 recorder fitted to a furnace provided with the damper control system shows that during a run when the furnace temperature was increased from 600° to 850° and then maintained constant at 850° by means of a conventional "on/off" type automatic temperature control unit, the CO_2 content of the waste gases never varied by more than 0.25% between limits. While the importance of maintaining constant CO_2 conditions is obvious, from the point of overall efficiency the makers advance no claim of economy in relation to this apparatus, but stress the more important angle that the maintenance of constant waste gas and consequently furnace chamber atmosphere conditions is of vital importance in the heat treatment of metals for the avoidance of excessive oxidation or surface decarburization.

Although the manometer is so sensitive, it is remarkably free from the effects of external vibration, and the component parts have proved themselves under arduous industrial conditions over many years.

Reactivity of Cokes*

The increased use of gas producers during recent years has focused attention on the problem of coke reactivity, and technicians generally are in agreement that reactivity is a factor of fundamental importance in the operation of such plant. Unfortunately there is not this measure of general agreement concerning the methods adopted to evaluate reactivity, and many practical operators are sceptical of the relationship between results obtained by laboratory test and what actually happens in practice on large-scale plant. The Author of a new book on the subject, M. H. Guérin, sets out to clarify the situation, and as a first step makes a critical examination of previous literature on this problem of reactivity. In his comprehensive work, with its 550 odd references to published papers, and so on, the Author systematically deals with the reactivity of cokes to carbon dioxide, oxygen, and steam, and in each case discusses the significance of laboratory results to large-scale practice. The treatment throughout is extremely thorough, and the book should prove helpful to all who are interested in the utilization of solid fuels, from both theoretical and practical aspects.

* *Le Problème de la Réactivité des Combustibles Solides.* H. Guérin, Faculté des Sciences de Nancy. Published by La Libraire Dunod, 92, Rue Bonaparte, Paris 6. 222 pages, 85 diagrams. Price 329 fr.

Detection and Estimation of Small Amounts of Gases*

By Norman B. Biggs, B.Sc.,
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ON some occasions it may be necessary to ascertain quickly if atmospheres contain combustible constituents, and if any such are near the explosive limit. Combustion and explosion methods are available. The Haldane[1] or any other form of gas analysis apparatus fitted with combustion or explosion devices may be used. McNair and Gull[2] have devised a portable combustion apparatus for this purpose.

In the explosion method the air sample is exploded with a measured quantity of hydrogen of known purity, or more simply with "electrolytic gas"—*i.e.*, the mixture of hydrogen and oxygen produced on the electrolysis of water. An inverted Hempel explosion bulb may be used for the generation. About 15–20 ml. of the electrolytic gas is exploded with a measured quantity (60 ml. is suitable) of the air sample. Contraction of the original volume denotes the presence of combustible gas.

Sometimes a smell of gas is reported on the district, and although not of sufficient dimensions to cause any explosion danger, it may be advisable in confined spaces to ascertain if the atmosphere is physiologically harmful. A test for carbon monoxide will show this, and methods are given below. A carbon monoxide test is also useful where it is not certain that a coal gas leak is responsible for the odour. Sewer gas and petroleum vapours in small quantities percolating through soil, &c., are easily mistaken for coal gas. The latter alone contains carbon monoxide, however, and differentiation may therefore be made.

Carbon Monoxide

The iodine pentoxide method is well known in the Vandaveer apparatus.[3] It gives accurate quantitative results with concentrations as low as 0.002%. Precautions must be taken against interfering gases. Small amounts of hydrogen, methane, ethane, hydrogen sulphide, sulphur dioxide, and oxides of nitrogen do not materially affect the accuracy, but ethylene does, even in small quantities. A portable apparatus has also been described.[4]

A tube containing iodine pentoxide soaked in sulphuric acid ("Hoolamite") may be used for the detection of carbon monoxide, by its colour change from white—bluish green—violet brown—black, according to the concentration of carbon monoxide. The colour change is not permanent, and will only occur with relatively large amounts of carbon monoxide.

Palladium chloride test papers are used for the detection of carbon monoxide.[5] Approximate quantitative measurements are possible from the depth of stain produced. The "Post Office" detector[6] and the D.S.I.R. method[7] use this principle. The latter is more sensitive and accurate, and has provision for removal of hydrocarbons and other gases which also cause staining of the test paper. No protective devices are fitted to the P.O. detector, and so it is unsuitable in the presence of petroleum vapour. It does allow detection, however, of hydrogen sulphide, which also causes blackening.

The use of blood to detect carbon monoxide is not so generally used. These methods have the advantage of being specific, nitric oxide being the only other gas which causes interference. Haldane[8] used a colorimetric titration of blood solution with carmine in the following manner: A 0.5% blood solution is made and part kept for comparison purposes. Another part is shaken with the air sample, and another part saturated with carbon monoxide. The two samples are then titrated with carmine solution to match the original blood solution. From the results the percentage carbon monoxide saturation can be deduced and hence the percentage in the air. Another colorimetric method has been devised[9] using a mixture of pyrogallol and tannic acid to develop the colour, which is then compared with a set of standards previously prepared. The carbon monoxide content is obtained with the use of graphs.

Where only qualitative detection of carbon monoxide is required the spectroscopic method has much to commend it. While a spectrometer is not part of the usual gas-works laboratory equipment, it is often possible in sizeable towns to obtain the use of one.

A dilute blood solution shows a characteristic absorption spectrum —two dark bands between the D and E lines. On addition of a little freshly prepared concentrated ammonium sulphide solution only one broad absorption band appears between the positions of the original bands. In the presence of carbon monoxide the spectrum is almost the same as that of pure blood apart from a slight shift towards the violet, but this time the bands remain the same on the addition of ammonium sulphide.[10] By bubbling 5–10 litres of the air in question through a dilute blood solution a sensitive and very definite test is given.

A quantitative estimation using sodium hydrosulphite has been described by Pieters.[11]

Using the Hartridge reversion spectroscope[12] carbon monoxide can be distinguished from nitric oxide. With this instrument Holden[13] has devised a technique capable of accurate quantitative measurements. In a sample of less than 25 ml. 1 part of carbon monoxide per 100,000 can be accurately determined.

Carbon monoxide in air may also be measured by the rise in temperature produced when the sample is passed over a mixture of cupric oxide and manganese dioxide ("Hopcalite").

Sulphur Dioxide

Sulphur dioxide, even in small amounts, usually makes its presence noticeable by its characteristic smell. It may be tested for by the decoloration of triphenylmethane dyestuffs (*e.g.*, malachite green or fuchsin) or by starch—iodate papers. The latter is used in the D.S.I.R. quantitative estimation.[7]

Benzene and Toluene Vapours

(a) *In Air.*—A quantitative procedure suitable for most industrial purposes is outlined in No. 4 of the D.S.I.R. leaflets.[7] In this test concentrated sulphuric acid containing a trace of formaldehyde is used, which turns orange brown in the presence of benzene. Toluene and other homologues have a similar action, while naphthalene causes an interfering black film on the reagent. Spectroscopic techniques have been devised for aromatic vapours.[14] They depend on absorption spectra and are specific and very sensitive.

(b) *In Gas.*—The standard methods[15] of extraction with oil or activated carbon and the freezing method are, of course, well known. The further analysis of the extract is done by distillation.[16] Linden[17] has recently developed a method for the rapid determination of benzole in gas. The benzole in a few litres of gas is absorbed in tetralin, and the amount present calculated from the change in weight and the temperature and vapour pressure of the tetralin.

Carbon Disulphide

Another D.S.I.R. leaflet[7] gives a method suitable for vapours in air. It is colorimetric, the reagent being a solution of copper acetate and diethylamine. Carbon disulphide reacts with the latter, giving diethylamine diethyldithiocarbamate, which forms a coloured copper salt. Carbon disulphide is absorbed by alcoholic potash forming potassium xanthate. Copper xanthate is insoluble, and the potassium xanthate, and hence the carbon disulphide, can be estimated by titration with a standard copper acetate solution.[18]. Triethylphosphine forms a red insoluble addition compound $(C_2H_5)_3PCS_2$ with carbon disulphide, and this has been used for gravimetric determination of the latter.[19] The gas is passed through three wash bottles containing a strong caustic soda solution covered by an ethereal solution of triethylphosphine, until a red coloration appears in the third bottle. The amount of carbon disulphide present is obtained from the weight of the precipitate.

Quantitative estimations of carbon disulphide may also be made by catalytic conversion with platinized pumice and measurement of the hydrogen sulphide so produced.[20]

Feigl and Weisselberg have described a method for detecting carbon disulphide in the liquid phase.[21] It depends on the conversion of carbon disulphide by alkali in the presence of formaldehyde to trithiocarbonate, and the detection of the latter by the formation of lead sulphide from an alkaline plumbite solution. This method can be adapted for the gaseous phase by using a Bunte burette and shaking the mixture of formaldehyde, alkali and plumbite with the gas. In the presence of carbon disulphide a brownish coloration or precipitate will form, depending on the concentration. Hydrogen sulphide also gives the reaction and must first be removed.

Hydrogen Sulphide

The lead acetate paper can be used for quantitative determination. Comparison with a set of standard stains is employed in the D.S.I.R. method,[7] while that of Hollings and Hutchison[22] involves the determination of the optical density of the stain. The iodine methods, although not strictly accurate owing to the reaction with other substances, notably unsaturated hydrocarbons, are nevertheless very useful, being speedy and sufficiently accurate for routine purposes. In the Sommerville method[23] the gas is bubbled through a known quantity of starch iodine solution until the blue colour disappears.

The Tutwiler apparatus[24] embodies direct titration in the special burette of 100–110 ml. capacity. Its ease and speed of operation and its portability make it very valuable for purifier control. There are also available the more precise methods of precipitation, followed by volumetric or gravimetric determination.[25]

Hydrocyanic Acid

This is usually estimated by the polysulphide or ferrocyanide methods.[26] Hydrocyanic acid can be detected by the blue coloration given with copper acetate—benzidine acetate papers.[27] There is also a D.S.I.R. leaflet dealing with hydrocyanic acid.[7] Seil has described a method[28] using iodine, depending on the formation of cyanogen iodide in bicarbonate solution and its subsequent decomposition in acid with the liberation of iodine. A modified Tutwiler burette is used.

* Paper to the Yorkshire Junior Gas Association.

Nitric Oxide

Nitric oxide is usually determined by conversion to nitrogen dioxide, which is then allowed to react with a suitable organic compound, giving a dyestuff easily recognizable in small amounts. The Schuftan method[29] uses gaseous oxygen as the oxidizing agent, and m-phenylenediamine as the detecting reagent. That of Guyer and Weber[30] uses permanganate and a solution of alpha-naphthylamine and sulphanilic acid. Various modifications of these methods have been described.[31] Dudden[32] uses the nascent oxygen formed at the anode of an electrolytic cell for the oxidation.

Oxygen

The amount of oxygen encountered in coal gas is usually determined with alkaline pyrogallol, although chromous chloride[33] is coming into greater use. A pipette has been devised for the use of this reagent[34] in conjunction with the Orsat type of apparatus. Concentrations of 0.2–1.2% may be determined colorimetrically by comparing the colour developed in a fresh pyrogallol solution and alkali with a set of previously prepared standards.[35]. A colorimetric method for minute concentrations uses ammoniacal cuprous chloride.[36] This reagent is colourless in the absence of oxygen, but develops a blue colour when oxygen is admitted. Ammoniacal copper may also be used for volumetric determinations in the absence of other gases which are also absorbed—*e.g.*, carbon monoxide, ethylene, and acetylene. It is of particular use in cases where pyrogallol is unsuitable, as in ascertaining the purity of cylinder oxygen. In a recent innovation[37] the gas is passed over copper wetted with ammoniacal ammonium chloride solution, and the copper in the resulting mixed oxides is determined iodometrically as a measure of the oxygen in the sample.

Small quantities of oxygen impart an intense red colour to ferrous salt and alkaline catechol solution.[38] Concentrations of the order of 0.001% of oxygen may be estimated by the oxidation of ferrous ions.[39] A heated wire in a non-uniform magnetic field is cooled in the presence of a para magnetic gas—*e.g.*, oxygen—and this principle has been used in analysis.[40]

In the absence of organic vapours and carbon monoxide the production of clouds over phosphorus is a very sensitive test for traces of oxygen.[41] Where oxygen is known to be present this test may also be used for testing for the organic vapours, &c., which inhibit cloud formation.

The mass spectrometer has been used for the determination of traces of oxygen in nitrogen and for analysis of other gaseous mixtures.[42]

The analysis of hydrocarbon mixtures by Raman spectra has been described.[43] The Rayleigh gas interferometer[44] compares the refractivity of a gas sample against a standard. It is very sensitive, and has been used for measuring methane in mine air.[45]

REFERENCES.

(1) HALDANE and GRAHAM.—*Methods of Air Analysis* (1935).
(2) McNAIR and GULL.—*Analyst*, 1932, **57**, 159.
(3) VANDAVEER and GREGG.—*Ind. Eng. Chem.* (*Anal.*), 1929, **1**, 20. *J.S.C.I.* (*Trans.*), 1938, **57**, 39. (G.L.C. type.) SHNIDMAN, *A.G.A. Monthly*, 1943, **25**, 405–8, 428, 503–6, 522–3.
(4) HALDANE and GRAHAM.—*Loc. cit.* LUNGE-AMBLER.—*Technical Gas Analysis* (1934), p. 235.
(5) BRUNCK.—*Z. anal. Chem.*, 1889, **28**, 269. COHN.—*Indicators and Test Papers*, 1899, p. 205.
(6) *B.P.S.*, 396, 672, 1933.
(7) Department of Scientific and Industrial Research: Methods for the Detection of Toxic Gases in Industry. Leaflet No. 1, *Hydrogen Sulphide*; 2, *Hydrogen Cyanide*; 3, *Sulphur Dioxide*; 4, *Benzene Vapour*; 6, *Carbon Bisulphide Vapour*; 7, *Carbon Monoxide*.
(8) HALDANE.—*J. Physiol.*, 1895, **18**, 461.
(9) SAYERS, YANT, and JONES.—*Bur. Mines Tech. Paper* 373 (1925), Report of Investigations 2486, June, 1923.
(10) VOGEL.—*Berichte*, 1877, **10**, 794.
(11) PIETERS.—*Z. anal. Chem.*, 1931, **85**, 50.
(12) HARTRIDGE.—*Proceedings of the Royal Society* (A), 1923, **102**, 575.
(13) HOLDEN.—*Australian J. Exptl. Biol. Med. Sci.*, 1943, **21**, Pt. 1, 9–12.
(14) COLE and ARMSTRONG.—*J. Optical Soc. America*, 1941, **31**, 740. COLE, *ibid.*, 1942, **32**, 304.
(15) HOFFERT and CLAXTON.—*Motor Benzole, its Production and Use*.
(16) GOODERHAM.—*J.S.C.I.*, 1944, **63**, 65.
(17) LINDEN—*Gas* (*'s Gravenhage*), 1942, **62**, 70.
(18) HARDING and DORAN.—*J.A.C.S.*, 1907, **29**, 1476, 1480.
(19) *Gas Chemist's Handbook* (American Gas Institute) (1916).
(20) LUNGE-AMBLER.—*Technical Gas Analysis*, 249.
(21) FEIGL and WEISSELBERG.—*Z. anal. Chem.*, 1931, **83**, 101.
(22) HOLLINGS and HUTCHISON.—*Chem. Ind.*, 1935, 726, 752.
(23) SOMMERVILLE.—"GAS JOURNAL," 1910, **112**, 29.
(24) TUTWILER.—*J.A.C.S.*, 1901, **23**, 173.
(25) WEYMAN.—*Modern Gas-Works Chemistry* (1922).
(26) *Idem.*—*Loc. cit.* INESON.—*Gas-Works Laboratory Handbook* (1926).
(27) MOIR.—*Chem. News*, 1910, **102**, 17.
(28) SEIL.—*Dry Box Purification of Gas* (A.G.A., 1943).
(29) SCHUFTAN.—*Bremstoff Chemie*, 1932, **13**, 104.
(30) GUYER and WEBER.—*Ibid.*, 1933, **14**, 405.
(31) HOLLINGS.—*I.G.E. Trans.*, 1936–7 (*Communication No.* 154), p. 847. SHAW.—*Ind. Eng. Chem.* (*Anal.*), 1936, **8**, 162. *A.G.A. Proc.*, 1936, 711; 1938, 625.
(32) DUDDEN.—*I.G.E., Communication No.* 270 (1944).
(33) PFORDTEN.—*Ann.*, 1885, **228**, 112. *Gas Engineers' Handbook* (A.G.A.), McGraw Hill, 1934.
(34) *Colliery Engineering*, 1943, **20**, 222.
(35) PFEIFFER.—*J. Gasbel.*, 1897, **40**, 354. AMBLER.—Lunge-Ambler, *loc. cit.*, 211.
(36) MUGDAN and SIXT.—*Angew. Chem.*, 1933, **46**, 90.
(37) UHRIG, ROBERTS and LEVIN.—*Amer. Chem. Soc.*, April, 1943, 12–14.
(38) BINDER and WEINLAND.—*Berichte*, 1913, **46**, 255.
(39) *Ind. Eng. Chem.* (*Anal.*), 1942, **14**, No. 11, 880.
(40) KLANER, TUROWSKI and WOLFF.—*Angew. Chem.*, 1941, **54**, 494.
(41) PFEIFFER.—*J. Gasbel.*, 1898, **41**, 494. LUNGE-AMBLER.—*Loc. cit.*
(42) HIPPLE.—*J. App. Phys.*, 1942, **13**, 551. ROBERTS.—*Petroleum Refiner*, 1943, **22**, 149.
(43) *Ind. Eng. Chem.* (*Anal.*), 1942, **14**, 816. GOUBEAU.—*Oel und Kohle*, 1941, **37**, 840.
(44) LORD RAYLEIGH.—*Proc. Roy. Soc.*, 1896, **59**, 201; 1898, 64, 97.
(45) SEIBERT and HARPSTER.—*Bur. Mines, Tech. Paper* 185 (1913).

Thoughts on Post-War Planning*

By J. H. CHAPMAN, Swansea

LAST year there was presented to this Association an excellent Paper on Area Gas Supply, following the reading of which the Association passed a resolution to the effect that the requirements of the district could best be met by means of a gas grid. The possibilities of any such scheme may react in a hesitant policy on the part of individual undertakings when considering extensions or modifications of existing carbonizing plant, but the possibilities of such a scheme becoming effective do not affect in similar degree those questions relating to the enlargement and extension of an undertaking's distributing system. Accordingly, each undertaking may proceed now to plan the solution of its own problems related to gas supply, viewed from its own particular angle but with a thought to the possibility of ultimate linking up.

The war years have resulted in the accumulation of arrears of work—arrears which will have to be liquidated; in addition, new housing estates and new factory sites will have to be serviced, and so the development and general overhauling of an undertaking's distribution system have become urgent.

Many and varied are the plans being reviewed by local authorities, corporate associations, Press, and private individuals, for the suitable laying out of new housing estates and for town planning in general. A keen assessment of the real value of various schemes, and of the possibility of any of them being adopted, partially or wholly, calls for clear vision, for on this assessment may depend the success or failure of any scheme of distribution. It may be decided, for instance, to proceed with the laying of important trunk mains without waiting until a scheme is far advanced, or even without waiting for decisions as to the ultimate nature of the town's growth and the direction it will take. Initially, therefore, careful sifting of all the evidence is necessary.

Extension of Mains

The Town and Country Planning Bill gives an indication as to the line which future development will follow; residential expansion, for example, is expected to take place on the outskirts of towns, and it is hoped that congested dwelling centres will be relegated to the past. But in conjunction with residential expansion, a closer examination of the subject will show that there will have to be provided to the residents the usual social amenities, which accord with the intention of local authorities to provide complete satellite communities on the fringe—communities which are to be independent of the town for those amenities which a normal community should enjoy.

Nor is the inclination towards the fringe confined to householders; certain industries may move in a similar direction. In saying this, I fully realize that the heavy industries will continue to expand within and around existing areas; but the lighter industries do not suffer from so restrictive a policy, and their future developments are likely to be away from those industrial areas as we now know them. In point of fact, the Government has already commenced the practice of developing factory sites on virgin ground, on town outskirts, with the express intention of developing the sites into trading estates, with self-contained communities.

Post-war developments proceeding on these lines, it is obvious that many undertakings will be faced not only with the need to extend existing mains, but also with problems arising from the transference of a large proportion of their consumers from the town centre to areas entirely new. Such transfers will affect seriously any distribution system designed upon old and traditional principles; they will call for new trunk mains from manufacturing (or holder) stations to the new areas of development—with the incidence of heavy capital expenditure, particularly so if the route to be taken be a congested traffic route served with modern road surfaces.

Of late years there has come into being a practice of completing the roads to an estate before proceeding with the actual building developments. In consequence, undertakings have been required to lay their mains during the early stages of road development, or in any case to provide road crossings both for mains and services, leaving the mains to be laid in the grass verge, on one, or both sides of the road, at a later date. The practice will probably become common, and so, in those cases where road crossings only are to be made during the construction period, careful study of the plans (paying particular attention to levels) will be necessary, if, on the ultimate completion of the building programme, the best results are to be attained. In inserting the road crossings, experienced supervision is essential to ensure correct levels for eventual coupling up. Further, the exact location of crossings should be carefully recorded, since it is remarkable how difficult they are to locate if the record is incorrect or incomplete.

As to the question of choice between high and low pressure feeder mains, it is not practicable to lay down any hard and fast rule; each

* Paper to the Wales and Monmouthshire Association of Gas Engineers and Managers, May 17.

case can best be decided on its merits, following consideration of detailed estimates. It can be said, however, that while the smaller sizes of high pressure main may show some economy in capital outlay, low pressure distribution also has proved itself to be an economical system to operate, calling for no high pressure district governors and the resultant maintenance costs.

The costly road surfaces now employed make it imperative, when considering the life of service pipes, to take a long-term view. If the Industry continues to employ standard wrought iron pipes for service work, its interest will be served in seeing that these are coated (at least coated on the outside) not only to ensure a longer life, but also to limit to a minimum the necessity to disturb these expensive roads, with the resultant heavy reinstatement charges that such disturbance involves.

Gas for Industrial Purposes

During the war years the Gas Industry has played its part in the national effort by meeting the demands of industry, demands which, in some instances and for a variety of reasons, have seriously taxed both production and distribution capacity. Industrial loads, welcomed during the war, will be equally welcome during the peace. They have had the effect of adding impressive figures to our sales record—records which we hope to maintain in the years that lie ahead. At the same time we have to realize that the Gas Industry cannot live on industrial gas—at "cut" rates—alone. We must look at the industrial load in its true perspective. It is a very useful load when it has the effect of stepping up to capacity any manufacturing plant which is working only to partial capacity (usually involving very little additional labour costs, and spreading the existing overhead charges), but it is very doubtful indeed whether many present industrial gas rates warrant, in themselves, additional capital expenditure.

In support of low industrial gas prices the argument is sometimes advanced that the industrial user does not require the attention or the degree of maintenance service required by the domestic consumer. The argument may, to a degree, be sustained, but I feel that the cost of giving service to industrial consumers is often ignored or underestimated. The Gas Industry is always available to its consumers for advice and assistance, but the nature of the service to industrial consumers demands of the undertaking a more highly technical and a far more exacting service than that required by the domestic consumer.

Intimate contact with the technical staff of a prospective industrial consumer is a pre-requisite to subsequent happy relationship and mutual understanding. The service and ready advice given by the Gas Industry to industrial consumers, particularly during the war period, have given industrialists a fuller appreciation of the availability on tap of a fuel which is easily controllable and which guarantees a constant heat value.

In submitting his estimate of gas requirements, the industrialist usually confines himself to an estimate of his hourly (daily or weekly) consumption. Gas engineers, on the other hand, have to base their estimates not only on the figures supplied (for determining the probable yearly gas load), but also upon the maximum consumption (for determining the size of main adequate to meet the peak demand at any particular moment).

An instance which aptly illustrates the care which the gas engineer has to exercise is provided in the case of a factory which normally closes down for the week-end. The start of the new week sees a number of gas-fired furnaces being brought up to working temperature simultaneously with the re-start of the actual production process, when the maximum rate of consumption on each of the units may be reached, and even exceeded (having regard to the human element). Similar care will be necessary when estimating for furnaces which are thermostatically controlled, where the consumption during the temperature raising period is at a rate considerably in excess of that passing during the "cut off" period. To provide for these circumstances, the gas undertaking's preliminary examination of the load factor has to include a close examination of the gas-fired equipment to be employed and of the production methods to be followed. My own experience on this question shows that nine out of ten consumers will eventually be an overload, due to the installation of additional plant or to the failure of some other form of heating; I have found the extent of the overload to vary from 10 to 150%.

It sometimes happens in connexion with the erection of new factories that gas-fired furnaces (or other equipment) are ordered and installed without reference to the local gas undertaking. Then, when everything is ready to be started up (the technicians responsible for the erection of the plant having by this time left the district), the gas undertaking is hurriedly requested to attend, either to light up the furnace, to explain essentials, or to put right difficulties which, until overcome, may be holding up production throughout subsequent processes. The gas undertaking is expected to walk in, to put to work, adjust, or to regulate, possibly a type of furnace of which it has no experience. Such instances are not common, but the case is cited to emphasize the value of close contact and of good relations with the factory technicians, as well as to show that the standard required of gas undertaking engineers and technicians, in connexion with the preparation of schemes of this nature and in providing an effective maintenance service, is much higher than that required in maintaining effectively the appliances of domestic consumers.

Commercial Users

Under this heading I include bakers, cafes, restaurants, fish fryers, milk retailers, central heating, and a variety of smaller trades, into many of which gas undertakings were only just beginning to enter when the war commenced. In the early days, the cost of gas as compared with the cost of coal or one of the other fuels was always the potential customer's strong point, and if price *qua* price was the deciding consideration it too often proved to be the stumbling-block. Unfortunately, too many of these potential customers refused then to see beyond this question of fuel cost, and despite all our arguments and efforts the advantages that would accrue from the use of gas were not sufficiently appreciated. I sense a change in this attitude. Labour difficulties during the past few years have shown up in clear relief the value of gas; fish fryers, for example, have found that the speedy heating of their pans results not only in economy in time, but in economy in fat for the same output of cooked food, while the cleanliness of gas-fired ranges adds to their prestige for wholesome and appetising food. In this regard, there obviously will be exercised in the post-war years a stricter control than has hitherto prevailed, particularly in relation to cleanliness. Here lies a wonderful opportunity for the extension of the use of gas.

Cleanliness, too, is all important in milk distribution. In future milk retailers will be responsible not only for the cleanliness of the milk bottles they use, but also for the cleanliness of the milk churns which pass through their hands. Here again is a field capable of considerable development, for gas has shown itself to be the finest medium for supplying, rapidly, requirements of hot water and steam for washing and sterilizing. I have found that these retailers, through their own associations and organizations, are quick to talk among themselves of their own achievements in modern improvements, and that these Associations have engendered in the retailer a bond with his fellow trader. This is a good augury for the future, with the promise of the wider dissemination of knowledge concerning the convenience, cleanliness, and efficiency of gas.

Education

With the necessity for increased technical knowledge comes concern in relation to the greater technical training of our fitting staffs. Fitters generally take up the trade because of an urge to do something with their hands—to make something, rather than to continue with studies entailing to them a certain degree of drudgery and eventually an examination. This should be borne in mind when preparing a programme for the technical improvement of fitters; a long syllabus containing a variety of subjects entailing much writing may prove irksome, and they will soon weary of it. Interesting lectures confined to gas-fitting and equipment, with necessary technical data amplified by practical demonstration, should prove much more acceptable and would be much more easily assimilated. Towards this end I would prefer an arrangement whereby each district would have its full-time instructor (preferably an instructor from within the Industry), to whom could be sent for instruction selected fitters, and from whom fittings and sales staffs of undertakings would receive visits. To my mind, this arrangement would be preferable to one involving the attendance of fitters and apprentices at technical colleges and the like.

[*Our report of the Discussion will be published subsequently.*]

A Net Trading Profit of £43,026 was reported at the annual meeting of Ewart & Son, Ltd., at Letchworth on April 26. Provision for taxation required £24,000, leaving, with the amount brought forward, a balance of £26,739, out of which £5,000 has been set aside for post war contingencies. In his statement to the shareholders, Mr. S. Sanders said that after the adoption of last year's report the Company was three years in arrear with the dividend on its 16% cumulative preference shares. Six months' dividend was paid last December, and a further year's dividend was now recommended, bringing the payments up to June 30, 1942. Turnover, again mainly on war production work, had been maintained at much the same level as in the previous year. Trading results had been satisfactory and the liquid position was good. Development work was proceeding, and the Company hoped during the present year to resume the production and sale of water heaters. Thanks were accorded to Mr. A. M. Evetts, General Works Manager, the staff and all employees for the excellent services they had rendered during the year.

The Power-Gas Corporation, Ltd., has just published a new leaflet describing the P.G. steam-iron hydrogen plant. The steam-iron process is a most convenient method for producing hydrogen in single stage operation, and the outstanding points of the P.G. plant are low cost of production, high efficiency in terms of quantity of reducing gas per volume of hydrogen made, use of producer gas instead of water gas for reducing, mechanical operation of the plant and all its valves, the convenient, economical, and simple wet purification of the hydrogen and of the reducing gas, and removal of the CO content of the purified hydrogen to whatever extent required. The leaflet contains a flow sheet and interesting operating data and photographs of actual plant installations. Future applications for this type of plant will be in the industrial field, but it may be remembered that this is the process which was utilized in connexion with the production of hydrogen for the balloon barrage installation throughout the British Isles.

A GREAT DAY HAS DAWNED. With our hearts filled with thankfulness for victory, let us make this great resolve! Let us continue in our striving for a land free from anxiety and want—that the sacrifices of war may not have been in vain.

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COMPANY MEETING

Associated Gas and Water Undertakings, Ltd.

The Twelfth Ordinary General Meeting of Associated Gas and Water Undertakings, Ltd., was held on May 29, at Grosvenor House, Park Lane, W. 1. The Chairman, Mr. W. H. BENNETT, M.Inst.Gas E., said:

Following the usual practice of the Company, the profits for the year under review have been struck after providing for interest on loan capital, taxation, writing-off discount on debenture stock and depreciation of investments. At £62,980 the net profits are £2,881 less than the previous year, but it should be borne in mind that £5,005 has been contributed by revenue to extinguish discount on debenture stock, compared with £4,150 in 1944, while the sum written off investments and properties is more than £843.

There has, however, been a small decrease in dividends on investments, brought about by the necessary advance in the charge for gas by certain undertakings operating under the "sliding scale," which provides for a reduced dividend as the charge for gas is increased. But no dividend has been included in the accounts on the additional stock which was acquired towards the end of the year in the Horley District Gas Company, in which we now have a majority interest. The area of that undertaking is contiguous to that of our largest subsidiary—the East Surrey Gas Company—to the mains of which those of the Horley undertaking have for some years been connected.

With regard to the balance-sheet, there are only a few items to which attention need be called. Investments show a net increase of £64,259, chiefly in relation to the Horley Company, which in turn has brought about a pleasing reduction in an unremunerative bank balance. Discount on debenture stock is now extinguished, 16 years before the date for its redemption. With the elimination of this item, opportunity will be afforded in future years to write larger sums off investments, and thus add further strength to an already satisfactory position.

After payment of the full year's dividend on the Preference stocks and the interim dividend on Ordinary and Deferred stocks, the sum to be carried forward, subject to the proprietors' approval of the Directors' recommendations as to final dividends, will be £32,500, the same amount as that brought in at the commencement of the financial year. Dividends on the Preference capital are now being paid on their accrual, instead of two months afterwards as permitted by our articles of association. Many stockholders, especially those in receipt of fixed incomes, have expressed appreciation of this arrangement.

As stockholders are aware, the ban on the publication of the accounts of gas and electricity undertakings has precluded comment during the war on the operations of our subsidiaries, although it will have been rightly concluded, from our financial results, that our business was being successfully maintained. The recent removal of that embargo and the cessation this month of hostilities in Europe permit figures to be given of the considerable development of the undertakings which we control.

During the five years ended in September last the annual output of our 29 undertakings supplying gas increased from 19,218,000 to 27,592,000 therms, while the total coke made yearly rose from 158,700 to 212,500 tons. The total amount of coal carbonized annually increased from 248,800 to 330,200 tons, and the gas oil gasified yearly rose from 405,900 to 1,136,400 gallons. Units bought and generated by our four undertakings supplying electricity have increased by 51%. Expansion was general throughout the group, the largest rise in gas output of any one undertaking representing an increase of 82% over its pre-war figure.

At the outbreak of war there were 25 undertakings operating under our aegis. This has been increased to 30, their total embarked capital amounting to £4,247,000. Our gas undertakings now supply 158,400 consumers through 1,565 miles of main.

Future Prospects

The resources afforded by your Company to its undertakings contributed much towards meeting the considerable demands made upon them, and in overcoming exceptional difficulties due to the inevitable shortage of plant, materials, and labour and deterioration in the quality and suitability of coal. While much of the increased demand is attributable to the shortage of solid fuel available to the public and to our undertakings being situated in reception areas, only a small proportion of the total increase in output was consumed by war industries, our undertakings being located in urban and rural districts which are largely residential. Moreover, we were fortunate in that, regarded as a whole, the group suffered little war damage. Assuming reasonably stable social conditions and no violent fluctuations in the supply and price of coal, materials and labour, coupled with the maintenance of the principle of consumer freedom of choice among the competitive fuels available, we can look forward with confidence to the continuance of a satisfactory output during the post-war period.

The cessation of hostilities in Europe brings us closer to the planning of the fuel industries to meet the demands of the future, particularly those arising from the 4 million dwellings to be erected during the next 10 years. The Gas Industry is agreed that its future planning should be based upon an increased measure of functional and geographical integration in the manufacture, distribution, and utilization of gas and coke. It has been the policy and practice of gas corporations since their inception to bring about such integration.

The "Report on the Planning of the Gas Industry" of the British Gas Federation has been followed by the appointment by the Ministry of Fuel and Power of a Committee of Enquiry into the Gas Industry, "to review the structure and organization of the Gas Industry, to advise what changes have now become necessary in order to develop and cheapen gas supplies to all types of consumers, and to make recommendations." Pending the publication of such recommendations there is necessarily hesitation in embarking upon major schemes of reconstruction. Evidence has been submitted to the Committee of Enquiry by the Association of Gas Corporations in the form of a memorandum describing, factually and statistically, the operations of its member corporations, with particular reference to their policy, practice, and services since the inauguration of the movement twelve years ago.

The disadvantages to the consumer which would follow the substitution of bureaucratic control for free enterprise and the particular benefits attaching to the development of gas supply by the association of gas undertakings under gas corporations have been fully demonstrated. The question of nationalization is increasingly ceasing to be one of economic and practical considerations. It is being drawn more and more into the political arena, where the facts are liable to become obscured by political rivalries masquerading under the guise of social principles. A crucial test would be—would nationalization result in gas being cheaper to the consumer? There is nothing to show that it would. Irrespective of the form of ownership, the technical, economic, and practical problems of the Industry remain. The cost of coal, for example, still has to be met, and this, apart from the recent further addition of 3s. 6d. per ton, has risen by approximately 120% between the years 1938 and 1944.

The operational results during the war of our undertakings serve to emphasize the exacting and arduous nature of the responsibilities and work of the officers and employees of your Company and its undertakings. On your behalf, I extend to them the grateful thanks which they so richly deserve. They have faithfully made their contribution to the national effort, which has brought us within measuraable distance, given sustained effort, of victory over the last of our enemies.

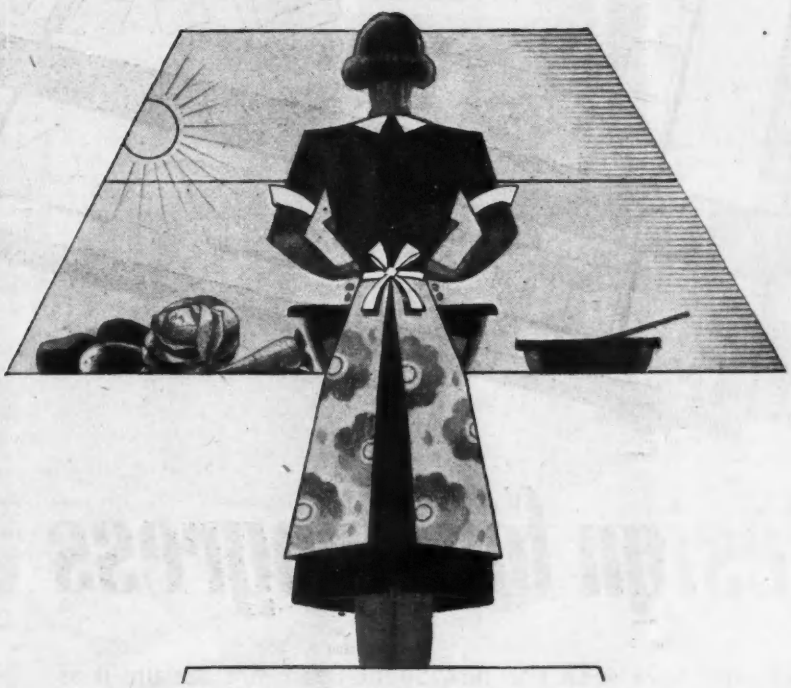
The report and accounts were unanimously adopted.

Ayr Gas Company.—Net profit for 1944, after providing for income tax, was £4,954, a decrease of £562 compared with the previous year. Presiding at the annual meeting, Mr. J. A. D. Murdoch said that extensions to the carbonizing plant were nearing completion, and it was expected that the new retorts would be producing gas in the next few weeks. Routine maintenance and repair work was about two years in arrear owing to the war, but it would be carried out with all speed as soon as labour and materials became available. The increased cost of coal had been met partly by an increase of 2½d. per thousand cu.ft. in the price of gas and 7s. per ton in the price of coke. In view of the latest increase in the price of coal it might be necessary to make another increase in the price of gas. The Directors had always tried to hold the balance fairly between consumers and shareholders, and were reluctant to make a further increase if it could be avoided. They would watch the position carefully, and take what action they considered necessary at the appropriate time.

Drakes, Ltd.—The 43rd annual report and accounts show a trading profit for the year ended December 31, 1944, including dividends and interest received, of £25,945, the net amount carried to profit and loss appropriation account being £7,427, to which was added a balance of £15,890 brought forward. After transferring £500 to special depreciation account, £2,000 to reserve fund, and providing for preference dividend, a dividend on the Ordinary shares of 7½% has been declared, leaving £16,168 to be carried forward.

Meters, Ltd.—In his statement circulated with the 48th annual report, Mr. J. Morley states that the net profit for the year ended March 31, was £28,125, which, with the balance of £10,558 brought forward, made a total of £38,683. Certain internal reserves amounting to £43,376 had been built up over a long period before the war, but the Board now considered these reserves were no longer necessary, and they had therefore been brought into the accounts this year. The Board recommended the transfer of £50,000 to general reserve, making that fund £175,000, the transfer of £5,000 to reserve for deferred repairs, making that fund £10,000, the payment of final dividends making 5½% on Preference stock and 10% on Ordinary stock, carrying forward a balance of £13,455. The subsidiary company had again had a successful year and paid a good dividend. It was hoped that the Company would soon be able to devote its activities to peace time products, although the continued labour shortage was a serious difficulty and was likely to exist for some time to come. In conclusion, Mr. Morley paid tribute to the staff and employees for their loyal service throughout the war.

IMAGINATION



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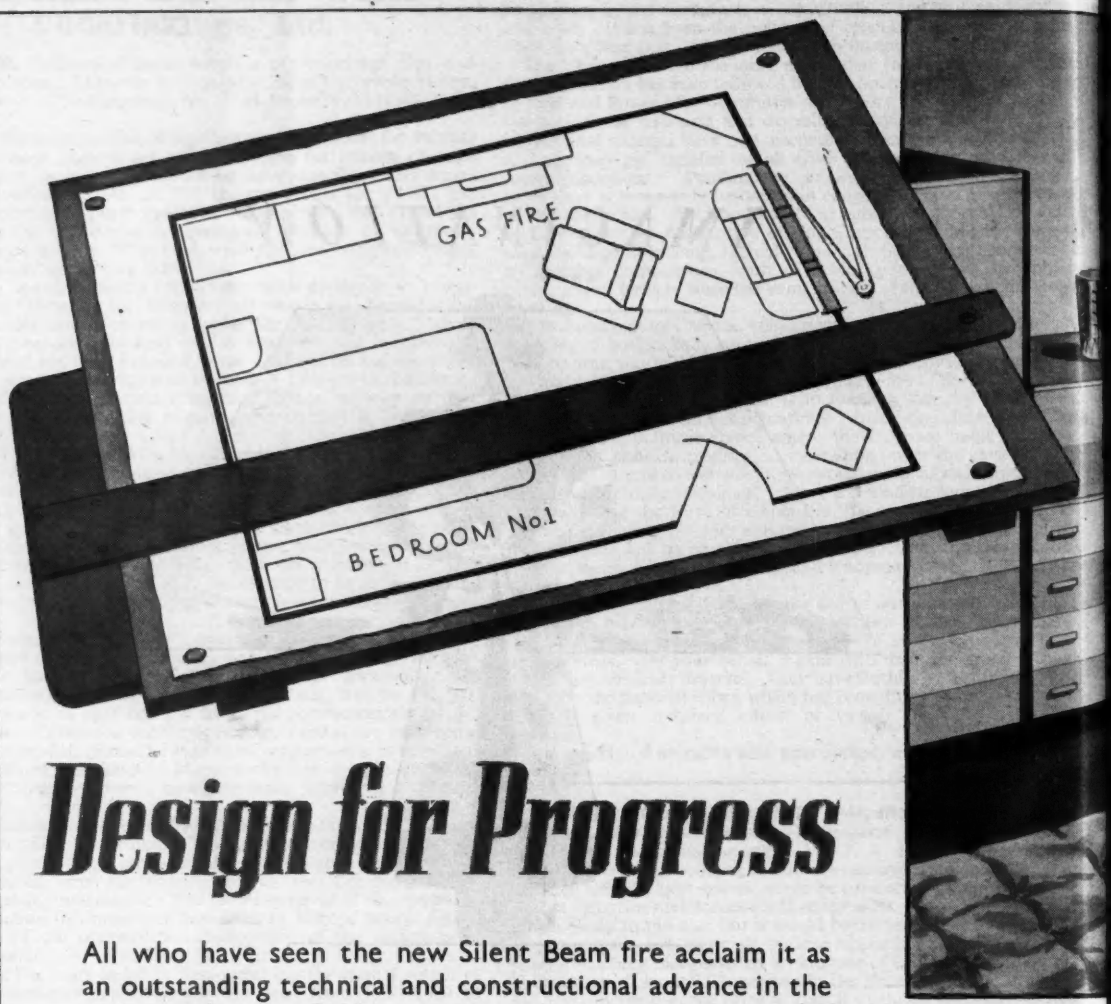

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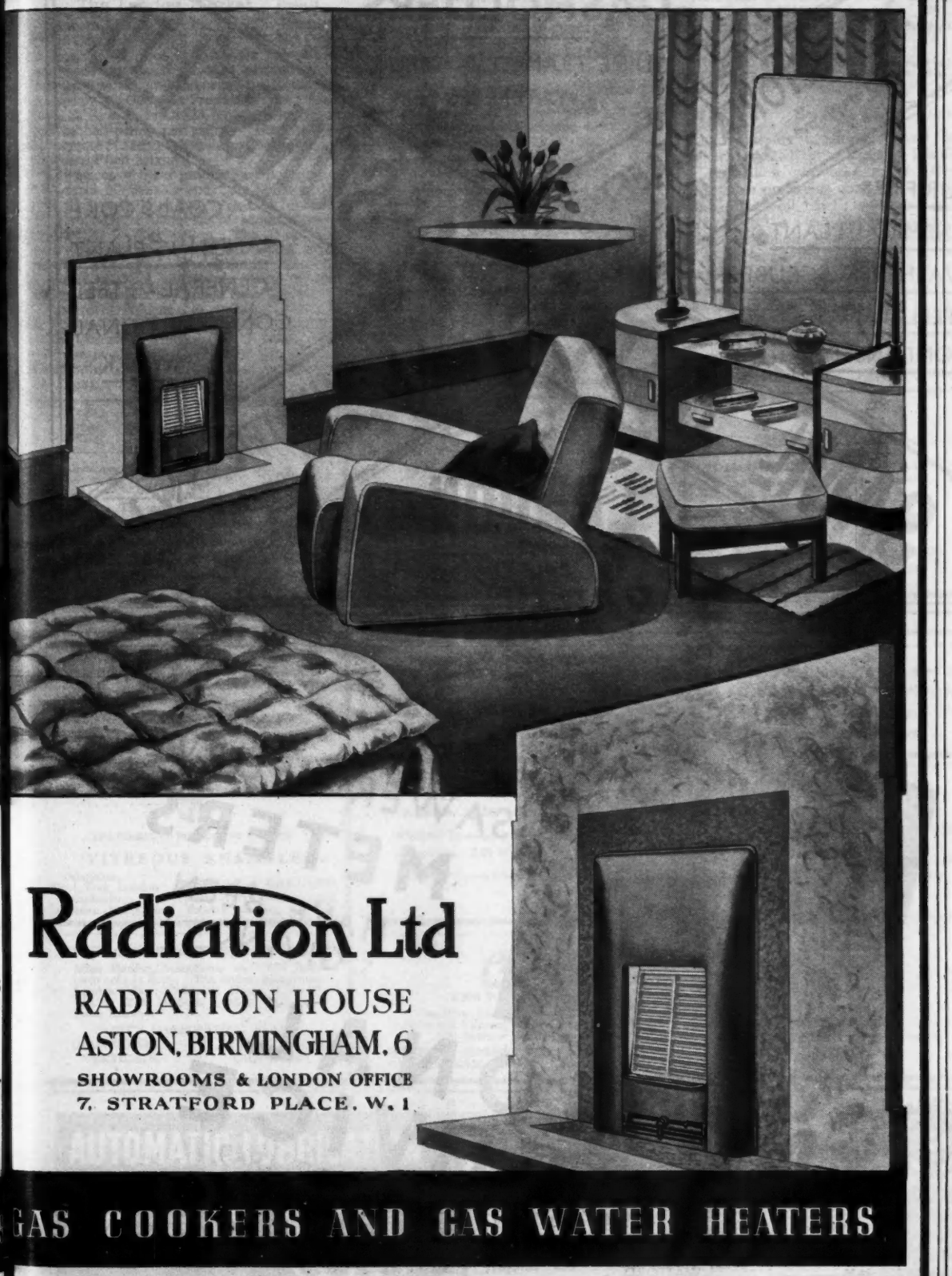

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GAS PRODUCTS PRICES

The London Market June 4.

As from March 5, by the Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), the maximum price of Pitch for briquetting has been increased to 60s. per ton f.o.r. supplying works, and the prices for Road Tar, as fixed by the Coal Tar Products Prices Order, 1943, S. R. & O. No. 1528, have been increased by one half-penny per gallon. There is also an increase of 5s. per ton in the price of standard Creosote/Pitch Mixture.

The prices of other products are unchanged.

Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172), is in force.*

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole, and calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

Control of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), contains an amendment of the Control of Toluene (No. 3) Order, 1943.

There is also the Control of Benzole and Coal Spirit (No. 2) Order, 1944 (S. R. & O., No. 988).

Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O., 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene.

* Slightly amended by Control of Benzole and Coal Spirit (No. 2) Order, 1944.

The Provinces June 4.

The average prices of gas-works products during the week were : Pitch and Crude Tar,* Toluole, naked, North, 90's. 2s. to 2s. 2½d., pure, 2s. 9d. (now controlled by S. R. & O. 1944, No. 988, operative from Sept. 1, 1944. Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1, and S. R. & O. 1944, No. 988, part I, operative from Oct. 1, 1944, Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943, Naphthalene now controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

Attention is called to Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), referred to on p. 305, "JOURNAL" of March 7.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland June 2.

Quietly steady conditions prevail in this market. Refined tar*: Yield to Distillers is 5d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5¼d. to 6¼d.; hydrogenation oil,* 5⅞d.; low gravity or virgin oil,† 7¼d. to 7½d.; benzole absorbing oil,* 6¼d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

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GAS STOCKS AND SHARES

The coming General Election continued to depress business last week, but towards the close the announcement of the relaxation of new capital issue control and the withdrawal of the limitations on methods of issue gave a brighter appearance to markets to which better news on the Syrian position also contributed.

The Gas Market was fairly well supported although available supplies are still small. Prices during the week were well maintained and there were comparatively few changes. On the publication of the report, Imperial Continental rose 5 points on the *ex div.* price, otherwise there were no special features. Compared with a month ago there have been fewer price changes than for some time past, and although the majority were upwards, the market was not without a few reactions. Gas Light units for instance fell 1s. 3d. on the month and South Metropolitan ordinary dropped 7½. As regards the two Indian Companies, it is interesting to note that while the Oriental stock hardened 10 points, Bombay fell 3s.

The following were the changes compared with a week ago:

OFFICIAL LIST		
Bournemouth 7 p.c. max.	158—163	+1
Cardiff Ord.	125—130	+3
Gas Light 3 p.c. Deb. (*x.d.*)... ...	89—92	May 28
Ditto 5 p.c. Red. Deb. (*x.d.*) ...	106—109	"
Ditto 4½ p.c. Red. Deb. (*x.d.*) ...	106—109	"
Imperial Continental Ord. (*x.d.*) ...	117—122	"
Primitiva Holdings Ltd. Ord. ...	12/—13/-	+-/3d.
United Kingdom Gas Corporation Ord.	23/6—24/6	—-/3d.
Wandsworth 4 p.c. Pref.	103—106	+1
SUPPLEMENTARY LIST		
Malta and Mediterranean 7 p.c. 1st Pref. (*x.d.*)	85—95	May 28
Ditto 7½ p.c. 2nd Pref. (*x.d.*) ...	85—95	"
PROVINCIAL EXCHANGES		
Chester Ord	115—117	+1½
Newcastle 4 p.c. Pref.	103½—105½	+1
Ditto 3½ p.c. Deb.	100—102	—½

Quotations on the London and Provincial Stock Exchanges

OFFICIAL LIST

Issue. £	When ex-Dividend.	Dividends Interest. Amnt. or Rate% Prev. Hf. Yr. Actual.	Last Hf. Yr. Actual.	NAME.	Quotations May 31
1,767,439	March 12	20/-	20/-	Alliance & Dublin Ord. ...	115—120
891,664	May 7	6d.	6d.	Asscd. Gas & Water U'd'ts Ord.	23/—24/-
388,938	"	7¼d.	7¼d.	Do. Deferred	23/6—24/6
500,000	March 12	2½	2½	Do. 4½ p.c. Red. Cum. Pref.	21/—22/-
535,545	"	2	2	Do. 4 p.c. Red. Cum Pref.	20/—21/-
341,966	"	2	2	Do. 4 p.c. Irred. Cum. Pref.	18/3—19/3
561,370	Feb. 19	70/-	70/-	Barnet Ord. 7 p.c.	159—164
300,000	Oct. 9	10⅝d.	8⅜d.	Bombay, Ltd.	41/—44/-
690,407	Feb. 5	70/-	70/-	Bournemouth 7 p.c. max. ...	158—163
362,025	Dec. 11	2	2	Do. 4 p.c. Deb. ...	102—107
659,955	March 5	25/-	57/-	Brighton, &c., 5 p.c. Con. ...	107—112
885,000	" 12	60/-	60/-	Brit. Gas Light Ord.	132—137
545,000	Dec. 18	2½	2½	Do. 5½ p.c. 'B' Cum. Pref.	115—120
120,000	"	2	2	Do. 4 p.c. Red. Deb.	95—100
10,000	April 23	9/-	4/6	Cape Town, Ltd., 4½ p.c. Cu. Pf.	
626,860	Feb. 12	70/-	70/-	Cardiff Con. Ord.	125—130
24,500	Nov. 13	8⅜d.	8⅜d.	Colombo 7 p.c. Pref.	22/6—24/6
764,169	March 19	4.78d.	4.78d.	Colonial Gas Assn. Ltd. Ord. ...	16/6—18/6
400,000	"	7.649d.	7.649d.	Do. 8 p.c. Pref. ...	22/—24/-
1,748,090	July 22 '40	30/-	30/-	Commercial Ord.	63—68
620,000	Dec. 11	1½	1½	Do. 3 p.c. Deb.	74—79
286,344	Feb. 19	2½	2½	Do. 5 p.c. Deb.	112—117
807,560	"	60/-	60/-	Croydon sliding scale	124—129
644,590	"	50/-	50/-	Do. max. div.	107—110
620,385	Jan. 2	2½	2½	Do. 5 p.c. Perp. Deb. ...	125—130
179,500	Feb. 12	50/-	50/-	East Surrey 'B,' 5 p.c.	103—108
176,461	Dec. 27	2½	2½	Do. 5 p.c. Deb. (Irred.)...	124—129
239,135	Nov. 13	6d.	6d.	Gas Consolidation Ord. 'A' ...	22/3—23/3
250,000	"	4½	4½	Do. Ord. 'B' ...	22/3—23/3
250,000	May 7	2	2	Do. 4 p.c. Red. Cum. Pref.	18/6—20/6
19,101,877	Feb. 19	6d.	6d.	Gas Light & Coke Ord. ...	22/—23/-a
2,600,000	"	35/-	35/-	Do. 3½ p.c. max.	81½—84½
4,477,106	"	2	2	Do. 4 p.c. Con. Pref. ...	102—105
2,993,000	Jan. 8	1⅞	1⅞	Do. 3⅞ p.c. Red. Pref. ...	101½—104½
8,602,497	May 28	1¼	1¼	Do. 3 p.c. Con. Deb. ...	89—92
3,642,770	"	2½	2½	Do. 5 p.c. Red. Deb. ...	106—109
3,500,000	"	2½	2½	Do. 4½ p.c. Red. Deb. ...	106—109
700,000	March 12	1⅜	1⅜	Do. 3½ Red. Deb. ...	99—101
5,600,000	May 28	—	†£10	Imperial Continental Cap. ...	117—122
43,820	Jan. 29	1⅜	1⅜	Do. 3½ p.c. Red. Deb. ...	97—100
2,167,410	Feb. 12	50/-	60/-	Liverpool Ord.	127—130
231,978	" 19	50/-	50/-	M.S. Utility 'C' Cons.	110—115
918,657	"	2	2	4 p.c. Cons. Pref.	101—104
675,000	April 30	‡40/-	‡40/-	Montevideo, Ltd.	87—90
300,000	" 23	£6	£4	Oriental, Ltd.	165—170
368,537	Dec. 11	57/6	50/-	Plymouth & Stonehouse 5 p.c.	113—118
621,667	Feb. 5	72/6	72/6	Portsmouth & Gosport Cons.	153—158
2,381,363	May 15/'44	†9½d.	†9½d.	Primitiva Holdings, Ltd. Ord.	12/—13/-
233,900	Dec. 11	3	3	Do. 6½ p.c. Red. Cum. Pref.	99—104
648,999	Sept. 11	6⅜	6⅜	Severn Val. Gas Cor. Ld. Ord.	23/6—24/6
597,972	March 12	2½	2½	Do. 4½ p.c. Cum. Pref. ...	21/6—22/6
2,528,714	Aug. 21	6d.	3⅜d.	South East'n Gas Cn. Ld. Ord.	22/3—23/3
1,000,000	Feb. 26	2½	2½	Do. 4½ p.c. Red. Cum. Pref.	21/9—22/9
1,068,869	"	2	2	Do. 4 p.c. Irred. Cum. Pref.	20/—21/-
6,709,895	Feb. 12	†20/-	†40/-	South Met. Ord.	87—90
1,135,812	"	3	3	Do. 6 p.c. Irred. Pref. ...	127—132
850,000	"	2	2	Do. 4 p.c. Irred. Pref. ...	101—104
1,895,445	Jan. 2	1½	1½	Do. 3 p.c. Perp. Deb. ...	87—90
1,000,000	" 15	2½	2½	Do. 5 p.c. Red. Deb. ...	103—108
1,543,795	Feb. 5	50/-	50/-	South Suburban Ord. 5 p.c ...	117—122
512,825	"	2½	2½	Do. 5 p.c. Perp. Pref. ...	113—118
500,000	"	2	2	Do. 4 p.c. Perp. Pref. ...	100—105
250,000	"	1⅞	1⅞	Do. 3⅞ p.c. Red. Pref. ...	93—98
888,587	Dec. 11	2½	2½	Do. 5 p.c. Perp. Deb. ...	123—128
750,541	Feb. 5	50/-	50/-	Southampton Ord.	105—110
350,000	" 12	2⅜	2⅜	Swansea 5½ p.c. Red. Pref. ...	105—110
1,076,490	" 26	50/-	50/-	Tottenham & District Ord. ...	121—126
338,555	"	2½	2½	Do. 5 p.c. Pref.	113—118
453,380	Dec. 11	2	2	Do. 4 p.c. Perp. Deb. ...	100—105
1,247,505	Nov. 6	7½d.	6d.	U. Kingdom Gas Cor. Ord. ...	23/6—24/6
1,085,952	May 14	5⅞d.	5⅞d.	Do. 4½ p.c. 1st Cum. Pref. ...	23/—24/-
772,709	"	4⅜d.	4⅜d.	Do. 4 p.c. 1st Red. Cum.Pref.	19/9—20/9
745,263	Dec. 18	5⅞d.	5⅞d.	Do. 4½ p.c. 2nd Non.Cum. Pf.	20/—21/-
1,200,000	March 19	1⅜	1⅜	Do. 3⅜ p.c. Red. Deb. ...	97—102
380,608	May 7	66/3	66/3	Uxbridge, &c., 5 p.c.	125—130
1,371,138	Feb. 12	50/-	50/-	Wandsworth Consolidated ...	122—127
2,525,768	"	2	2	Do. 4 p.c. Pref.	103—106
1,343,964	Dec. 18	2½	2½	Do. 5 p.c. Deb.	128—133
383,745	"	2	2	Do. 4 p.c. Deb.	100—105
358,342	Feb. 12	50/-	50/-	Watford & St. Albans Ord. ...	120—125

SUPPLEMENTARY LIST

Issue. £	When ex-Dividend.	Dividends Interest. Amnt. or Rate% Prev. Hf. Yr. Actual.	Last Hf. Yr. Actual.	NAME.	Quotations May 31
351,685	Dec. 18	2½	2½	Brighton, &c., 5 p.c. Perp. Deb.	123—128
415,250	"	2	2	Bristol Gas Co., 4 p.c. New Deb.	100—103
140,205	Feb. 12	70/-	70/-	Cambridge, &c., 7 p.c. Cons. 'B'	143—148
295,932	March 12	50/-	50/-	Cheltenham, 5 p.c. Cons.Ord....	110—115
42,500	Dec. 18	2	2	Do. 4 p.c. Perp. Deb....	98—103
150,000	Feb. 19	2	2	Croydon Gas, 4 p.c. Pref. (Irr.)	98—103
130,000	Jan. 2	2	2	Do. 4 p.c. Deb. ...	100—105
53,220	Feb. 12	3	3	East Surrey, 6 p.c. Cum. Pref....	120—125
...	Aug. 19 '40	40/-	40/-	Eastbourne, 'B' 3½ p.c.... ...	97—102
117,425	March 1	—	£6	East Wight Cons. 5 p.c. ...	100—105
25,000	Dec. 18	2½	2½	Guildford 4½ p.c. Red. Deb. ...	100—105
156,600	Feb. 19	50/-	50/-	Hampton C't, 5 p.c. Cons. Ord.	100—105
18,000	May 28	—	£7	Malta & Med'n., 7 p.c. 1st Pref.	85—95
10,845	"	—	£7½	Do. 7½ p.c. 2nd Pref.	85—95
50,000	Feb. 19	52/3	52/3	Mid. South. Utll., 'A' Cons. 5 p.c.	107—112
70,380	Dec. 18	2½	2½	Newport (Mon.), 5 p.c. Deb....	115—120
65,000	April 30	2½	2½	North Middlesex, 5 p.c. Pref....	110—115
70,000	March 12	2½	2½	Plymouth & Stone., 5 p.c. Deb.	124—129
76,501	Dec. 18	2	2	Reading, 4 p.c. Perp. Deb. ...	97—102
74,777	April 3	2	2	Romford, 4 p.c. Debs. (Reg.) ...	97—102
21,000	Dec. 4	2½	2½	Slough, 5 p.c. Perp. Deb. ...	122—127
211,740	" 11	2½	2½	Southampton, 5 p.c. Red. Deb.	105—110
363,575	Jan. 2	2½	2½	Tottenham, 5 p.c. Reg. Red. Mt.	100—103
202,019	April 23	75/-	75/-	Tunbridge Wells, 4 p.c. Scale ...	125—130
135,257	Dec. 4	2½	2½	Uxbridge &c., 5 p.c. Perp. Deb.	123—128

PROVINCIAL EXCHANGES

Issue. £	When ex-Dividend.	Dividends Interest. Amnt. or Rate% Prev. Hf. Yr. Actual.	Last Hf. Yr. Actual.	NAME.	Quotations May 25
804,948	March 5	2½	2½	Bath Cons.	114—116
122,577	Feb. 19	2½	4½	Blyth 5 p.c. Ord.	124—126
1,667,250	" 12	2½	2½	Bristol, 5 p.c. max.	120½—121½
120,420	Dec. 18	2	2	Do. 1st 4 p.c. Deb	103—105
415,250	"	2	2	Do. 2nd 4 p.c. Deb. ...	102½—104½
3 28,790	"	2½	2½	Do. 5 p.c. Deb.	123—125
157,150	Feb. 12	3½	3½	Chester 5 p.c. Ord.	115—117
52,500	Dec. 18	2	2	Do. 4 p.c. Cum. Pref. ...	99—101
40,000	"	2	2	Do. 4 p.c. Non. Cum. Pref.	99—101
36,430	"	1⅞	1⅞	Do. 3½ p.c. Deb.	88—92
41,890	"	2	2	Do. 4 p.c. Red. Deb. ...	100—102
542,270	Feb. 12	3	4½	Derby Cons.	135—140
55,000	Dec. 18	2	2	Do. 4 p.c. Deb.	97—102
40,000	Feb. 19	5½	5½	Exeter 10 p.c.	185—195
10,000	"	5	5	Great Grimsby 'A' Ord. ...	175—185
6,500	"	5	5	Do. 'B' Ord. ...	175—185
79,000	"	5	5	Do. 'C' Ord. ...	165—175
732,000	Feb. 19	2	2	Hartlepool G. & W. Cn. & New	92—94
490,681	Dec. 18	1⅜	1⅜	Liverpool 3½ p.c. Red. Deb. Stk.	95—100
245,500	"	2	2	Do. 4 p.c. Red. Deb. Stk.	102—103
306,083	Jan. 2	2	2	Do. 4 p.c. Deb.	103—105
680,000	Dec. 18	2½	2½	Do. 5 p.c. Red. Stk. ...	104—109
20,000	"	2½	2½	Long Eaton 5 p.c. Pref.	9—11
80,000	"	2½	2½	Do. 5 p.c. Deb.	117—122
2,430,267	Feb. 12	6d.	6.9d.	Newcastle and Gateshead Con.	26/3—26/9a
682,856	"	2	2	Do. 4 p.c. Pref.	103½—105½
776,706	Dec. 27	1⅜	1⅜	Do. 3½ p.c. Deb.	100—102
250,000	"	1⅜	1⅜	Do. 3⅜ p.c. Red. Deb. ...	97½—99½
73,186	April 23	2	2	Do. 4 p.c. Red. Deb. ...	102—104
106,280	Feb. 15	5	5	Preston 'A' 10 p.c.	170—175
188,219	"	3½	3½	Do. 'B' 7 p.c.	132—135
1,806,339	Feb. 25	3½	3½	Sheffield Cons.	150—152
95,000	Jan. 2	2	2	Do. 4 p.c. Deb.	98—102
332,351	Feb. 5	3	3	Sunderland 6 p.c. max. ...	121—123
192,150	" 12	2½	2½	Weston-super-Mare Cons. ...	113½—115½
64,338	Jan. 2	2	2	Do. 4 p.c. Deb.	99—101
33,340	"	3⅜	3⅜	Do. 7½ p.c. Deb.	145—150

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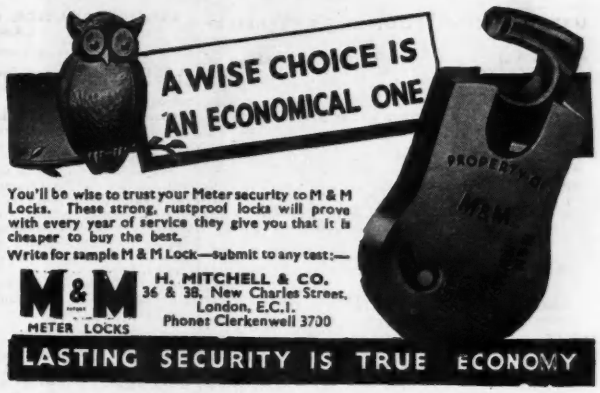
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CONTRACTS OPEN

BOROUGH OF WORKINGTON
(GAS DEPARTMENT)

TENDERS are invited for the PAINTING of Two Gasholders. Particulars and Specifications may be obtained from the Gas Engineer and Manager, Gas-Works, Workington. Sealed Tenders, in plain envelopes, endorsed "Painting of Gasholders," must be delivered to the undersigned not later than Wednesday, June 20, 1945.
The Corporation do not bind themselves to accept the lowest or any Tender.
Town Hall, Workington. JOHN R. COCKFIELD, Town Clerk.
June 2, 1945.

PLANT &c. FOR SALE & WANTED

'PHONE 98 STAINES.

FOR SALE.—Cylindrical Receiver 30 ft. by 7 ft. dia.; 100 lb.; Cornish Boiler, 3,300 lb., evaporation 140 lb. w.p.; Weir Feed Pump 8½ in. by 6 in. by 13 in.; Weir Feed Pumps (2) 5 in. by 3 in. by 6 in.; Weir Service Pump 6,300 g.p.h.; 7 h.p., 25 h.p., and 40 h.p. Crossley Gas Engines; Tangye 3-Throw Ram Pump 5 in. by 8 in.
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GEORGE COHEN, SONS & CO., LTD., Wood Lane, London W. 12. Telephone: Shepherds Bush 2070.

THE AIR MINISTRY has available for disposal a number of PLANTS designed for the PRODUCTION OF HYDROGEN at various locations in England, Scotland, Northern Ireland, and South Wales.
The plants are of varying production capacities and comprise in the main hydrogen generators; blue water-gas plants with auxiliaries; pumps with varying forms of drive; purifiers; boilers; and in some cases water softeners.
Each site has one or more gasholders of capacities ranging from 2,000 to 100,000 cu.ft., either column or spiral-guided and of welded or riveted construction. In addition, with the exception of two plants, gas compressors either electric or gas-engine driven are installed.
Plants will be offered for sale as complete installations and standing erected, but without guarantee as to serviceability or condition, and purchasers would be required to arrange for dismantling, loading and removing.
Certain of the plants will be broken down into their component parts, and offers will be considered for gas holder, blue water-gas plants, purifiers and other components as separate units.
Interested parties should apply in writing in the first place, stating briefly their requirements to the Under-Secretary of State, Air Ministry (C.19(a)), Kingsway, London, W.C. 2.

APPOINTMENTS VACANT

CUPAR GAS COMPANY, LIMITED

WORKING FOREMAN required. Following qualifications essential: Engineer trained, knowledge of Vertical Retorts (W.D.), capable of all running repairs and maintenance of Gas-Works plant and usual works tests. Must be strict disciplinarian. Wages £5 10s. per week plus free house, coal and gas.

Applications, stating Age, Experience, and any other pertinent details, along with a *copy* of three recent Testimonials, and position with regard to Essential Works Order and National Service, to the undersigned on or before June 16, 1945.

A. M. MACPHERSON,
Manager.

URBAN DISTRICT COUNCIL OF TYLDESLEY

(GAS DEPARTMENT)

APPLICATIONS are invited for the position of WORKING FOREMAN at the Council's Gas-Works.

Applicants should be well experienced in the working of horizontal retorts, and have a good general knowledge of gas-works practice.

Wages £5 19s. per week, including War Bonus, with free house, coal and gas. House immediately available.

The position is designated under the Superannuation Scheme, and the successful applicant will be required to pass a medical examination.

Applications, with *copies* of not more than three recent Testimonials, to be forwarded to the undersigned not later than June 13, 1945.

Town Hall, Tyldesley, Lancashire.

RICHARD F. WILSON,
Clerk of the Council.

SKEGNESS URBAN DISTRICT COUNCIL

GAS ENGINEER AND MANAGER

THE Council invite applications for the above Appointment, at a commencing Salary of £550 per annum, rising by annual increments of £25 to a maximum of £750 per annum (plus temporary cost of living bonus £59 16s. per annum).

Applicants must be duly qualified Engineers with a thorough knowledge and experience of the control and maintenance of Gas-Works plant, including Woodall-Duckham vertical retorts, benzole plant, and the usual purifying plant. Previous experience in the general administration of a gas undertaking is essential, and applicants should also be capable of drawing up specifications and preparing plans for extensions or alterations, and of supervising such work.

The person appointed will be required to devote the whole of his time to the duties of the office.

The appointment will be determinable by three months' notice on either side and is subject to the provisions of the Local Government Superannuation Act, 1937. The selected candidate will be required to pass a medical examination.

Applications, stating Age (which should not be over 50), Qualifications, present appointment and duties, and full details of Experience, together with information as to position in relation to National Service Acts and Essential Work Orders, must be delivered to the undersigned, accompanied by *copies* of not more than three recent Testimonials, not later than Monday, June 18, 1945.

Canvassing will disqualify.

Town Hall, Skegness. May 26, 1945.

IVOR M. CULE,
Clerk to the Council.

CITY OF NOTTINGHAM

(GAS DEPARTMENT)

ASSISTANT MAINS SUPERINTENDENT

APPLICATIONS are invited for the above Position at a commencing Salary of £400 per annum, plus war bonus (at present £59 16s.).

Applicants must have experience in Main and Service work of all types, including High and Low Pressure Distribution, with District and Service Governors.

Experience in Drawing Office practice, preparation of Estimates and control of men is essential.

The appointment is subject to the provisions of the Local Government Superannuation Act, and the successful applicant will be required to pass a medical examination and to reside within the City.

Applications, stating Age, full particulars of Training, Experience and Qualifications, together with the applicant's position in relation to the Essential Work Orders and National Service Acts, and accompanied by *copies* of two recent Testimonials, should be addressed to the undersigned not later than Wednesday, June 20, 1945.

Guildhall, Nottingham. May, 1945.

J. E. RICHARDS,
Town Clerk.

WANTED.—Experienced GASFITTER. Must have knowledge of Water Heating Apparatus, and a knowledge of Gas-fired Central Heating Installation desirable. Standard rate of wages 1s. 9½d. per hour for 47 hours per week. The position is permanent for suitable man.

Apply in writing to The Engineer and Manager, Conway Gas Company, Ltd., Castle Street, Conway.

SALES MANAGER required by Gas Appliance Manufacturers. Must be experienced in Sales Organization and Control of District Representatives.

Applications, stating Qualifications, Experience, and Age, should be addressed to No. 9435, "GAS JOURNAL," 51, High Street, Esher, Surrey.

COUNTY COUNCIL OF THE COUNTY OF LANARK

(GAS UNDERTAKING)

APPLICATIONS are invited for the Position of TECHNICAL ASSISTANT in the above Undertaking.

Candidates should have had experience in the control of Vertical Retorts and should be able to carry out all laboratory work attendant upon the efficient working of the Plant in general.

The Salary paid will be according to qualifications and will fall within the County Council Scale, rising to a maximum of £250 plus £60 War Bonus at present.

Applications, together with *copies* of two Testimonials, should be sent to the undersigned not later than June 15, 1945. Applicants should indicate their positions with regard to National Service and the Essential Works Orders.

County Gas Offices, Uddingston, Lanarkshire.

FRED R. MITCHELL, M.Inst.G.E.,
Engineer and General Manager.

TECHNICAL Sales Engineer required by the Whessoe Foundry and Engineering Company, Ltd., of Darlington for the Gas, Oil and Chemical Industries. Vacancy is suitable for man aged 25 to 35 with technical qualifications and some experience in these industries who is keen to devote his career to progressive technical sales work. Salary from £400 gross upwards according to age, qualifications and experience. Travelling expenses additional. Training period at full salary.

Applications and details of career should be sent by letter to Company's London Office, 25, Victoria Street, S.W. 1.

ELECTRICAL MAINTENANCE FITTER required by a Gas Undertaking in the Home Counties. Present rate 2s. 2½d. per hour for a 47-hour week, together with opportunities for earning overtime.

Preference will be given to applicants who have a knowledge of electrically driven and controlled plant normally used in a gas-works.

Apply, stating Age, Experience, and including *copies* of recent Testimonials to No. 9436, "GAS JOURNAL," 51, High Street, Esher, Surrey.

CHELTENHAM AND DISTRICT GAS COMPANY

CHEMIST

APPLICATIONS are invited for the above Position at a Salary (inclusive of War Bonus) of £380 per annum. Applications addressed to the undersigned should be received not later than June 20, 1945, and should be accompanied by Testimonials.

North Street, Cheltenham.

A. L. MORRIS,
General Manager.

ACCRINGTON DISTRICT GAS AND WATER BOARD

GENERAL MANAGER

APPLICATIONS are invited for the position of GENERAL MANAGER of the Board's Gas and Water Undertakings. The Salary will commence at £1,000, and subject to satisfactory service will rise by five annual increments of £50 to a maximum of £1,250 per annum.

Particulars of duties and conditions of appointment may be obtained from me.

Applications for the position must be received not later than Monday, June 25, 1945.

Central Office, St. James's Street, Accrington.

P. D. WADSWORTH,
Clerk to the Board.

THE LIVERPOOL GAS COMPANY

APPLICATIONS are invited for Positions on the TECHNICAL STAFF of the above undertaking.

(*a*) Qualified and experienced CHEMISTS or CHEMICAL ENGINEERS with knowledge o fuel and of the Carbonizing Industry.

(*b*) In one case a similar person with a knowledge of Instrument Engineering.

(*c*) Persons with Carbonizing or Gas-Works experience between 20 and 30 years of age for training as CARBONIZING SUPERINTENDENTS.

The Salary will be in accordance with the qualifications in each case.

Application Forms can be obtained from the Personnel Superintendent, The Liverpool Gas Company, Radiant House, Bold Street, Liverpool, 1, which will be forwarded upon request, and which should be returned to him so as to arrive on or before June 23, 1945.

(*Issued by permission of the Ministry of Labour.*)

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Canvassing either directly or indirectly is prohibited, and candidates should state in writing whether to their knowledge they are related to any member of, or the holder of any senior office under, the Council.

Town Hall, Brighouse. May 31, 1945.

ERNEST H. CLEGG,
Town Clerk.

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NOTICE IS HEREBY GIVEN that the TRANSFER BOOKS of this Company relating to DEBENTURE STOCKS only WILL BE CLOSED from the 20th to the 30th June, 1945, both days inclusive.

Gas-Works, Hornsey, N. 8. June 6, 1945.

By Order of the Board,
K. LESLIE MORTIMORE,
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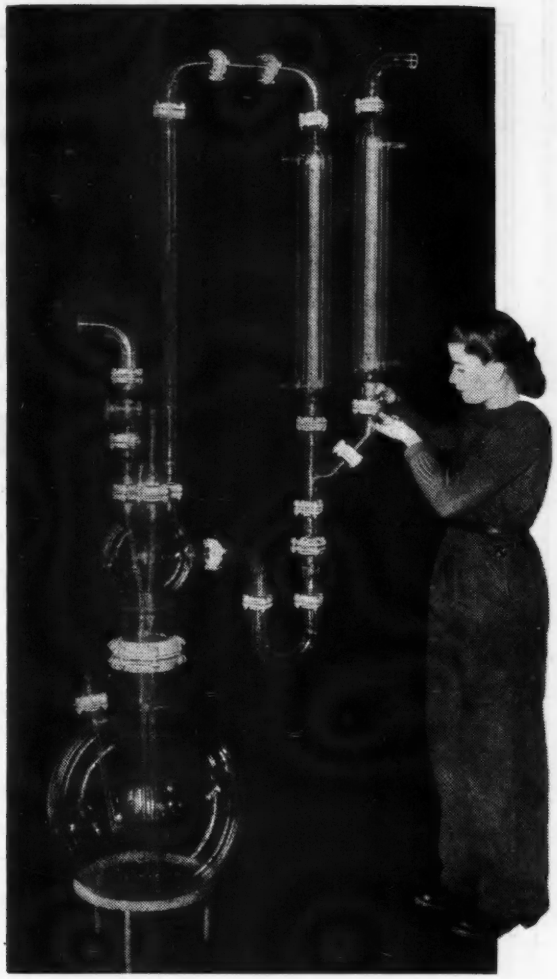

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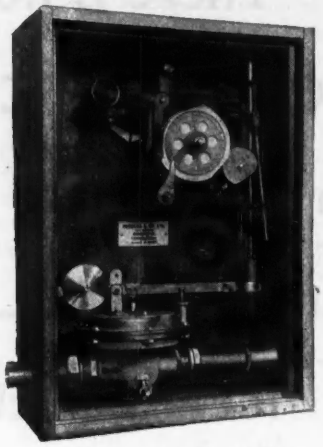

Fig. 49.—Patents 322887 and 447996.
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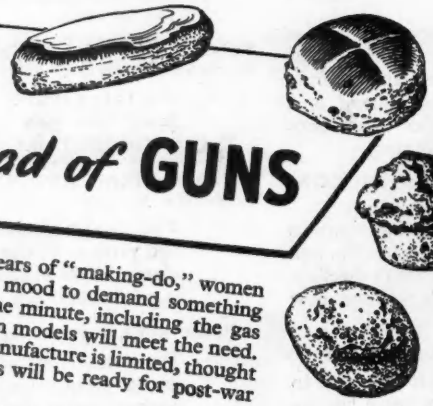

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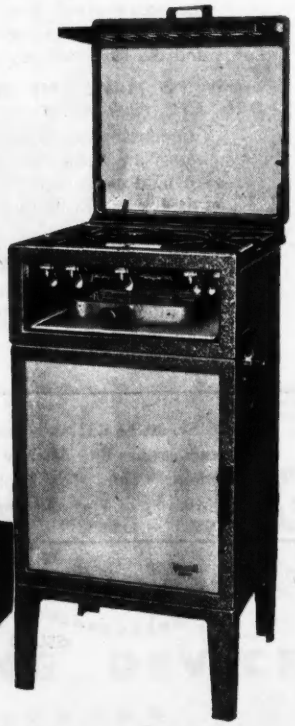

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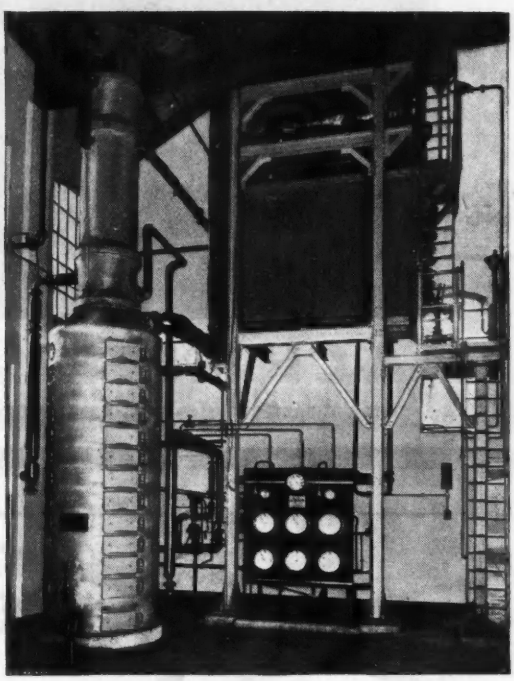

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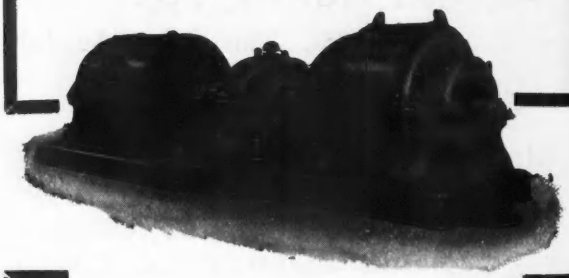

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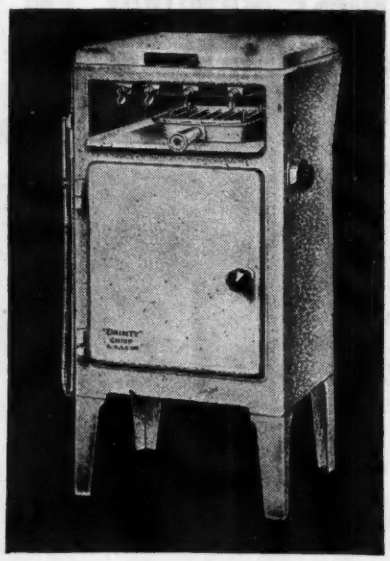

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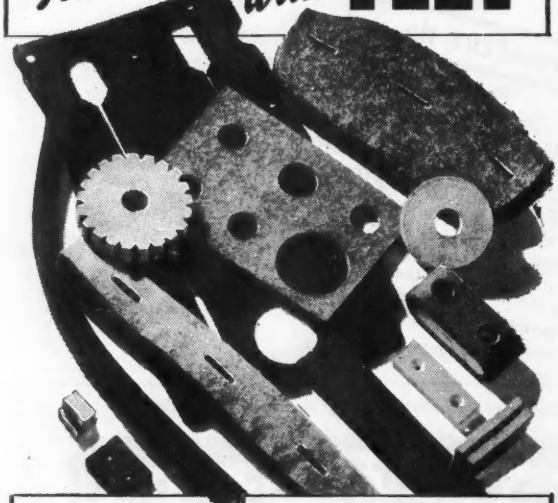

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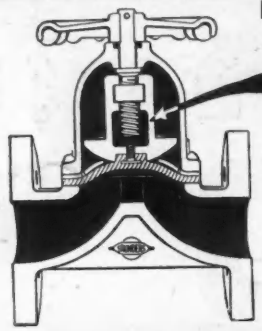

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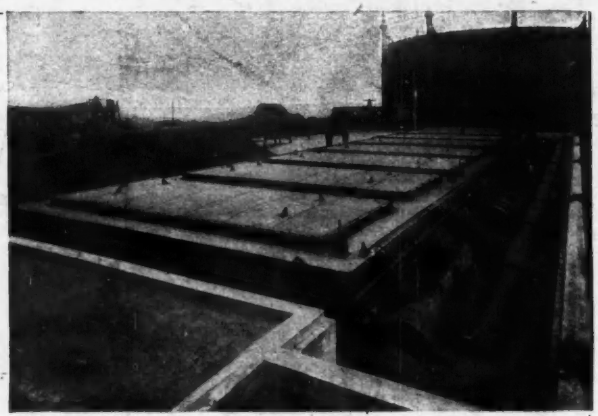

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